Solent Papers No.4

Hilsea Lines and Portsbridge

Garry Mitchell

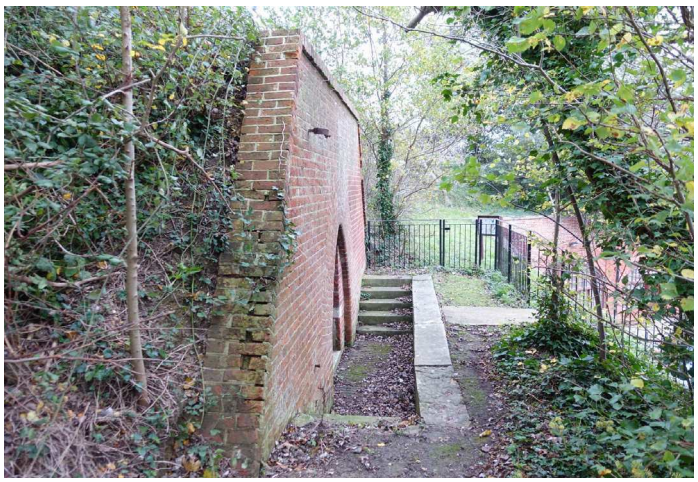
Front Cover:
West Demi-Bastion Casemates 2003

Above: West Bastion Casemates 2015

Left: West Demi-Bastion (Portsmouth Grammar School) 2004

Below: Expense Magazine on West Demi-Bastion 2011 and 2015

Bottom: Moncrieff pit with Expense Magazine West Demi-Bastion (Portsmouth Grammar School) in 2003



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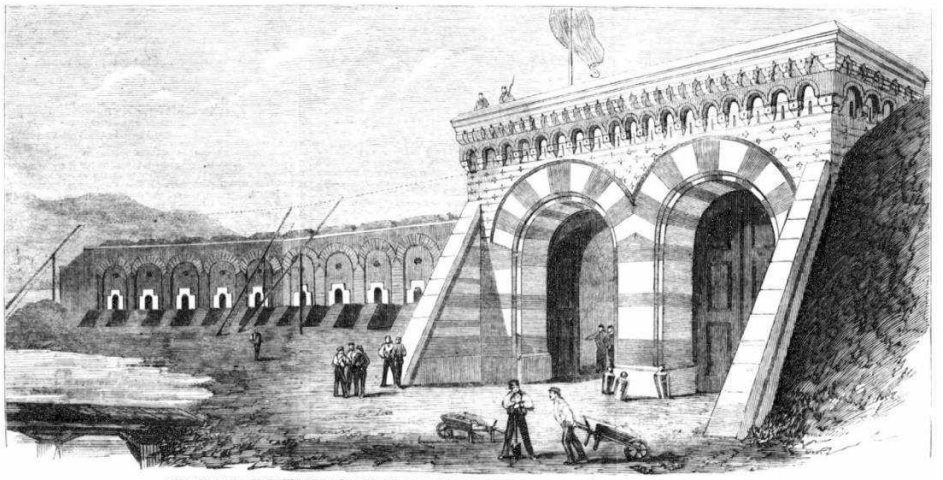
Hilsea Lines and Portsbridge

Written and illustrated by Garry Mitchell with additional drawings and information by David Moore



FORT HILLSEA, SHOWING THE NEW GATEWAY FOR THE DIVERTED LONDON ROAD.—(FROM SKETCHES BY F. H. BRANSON.)

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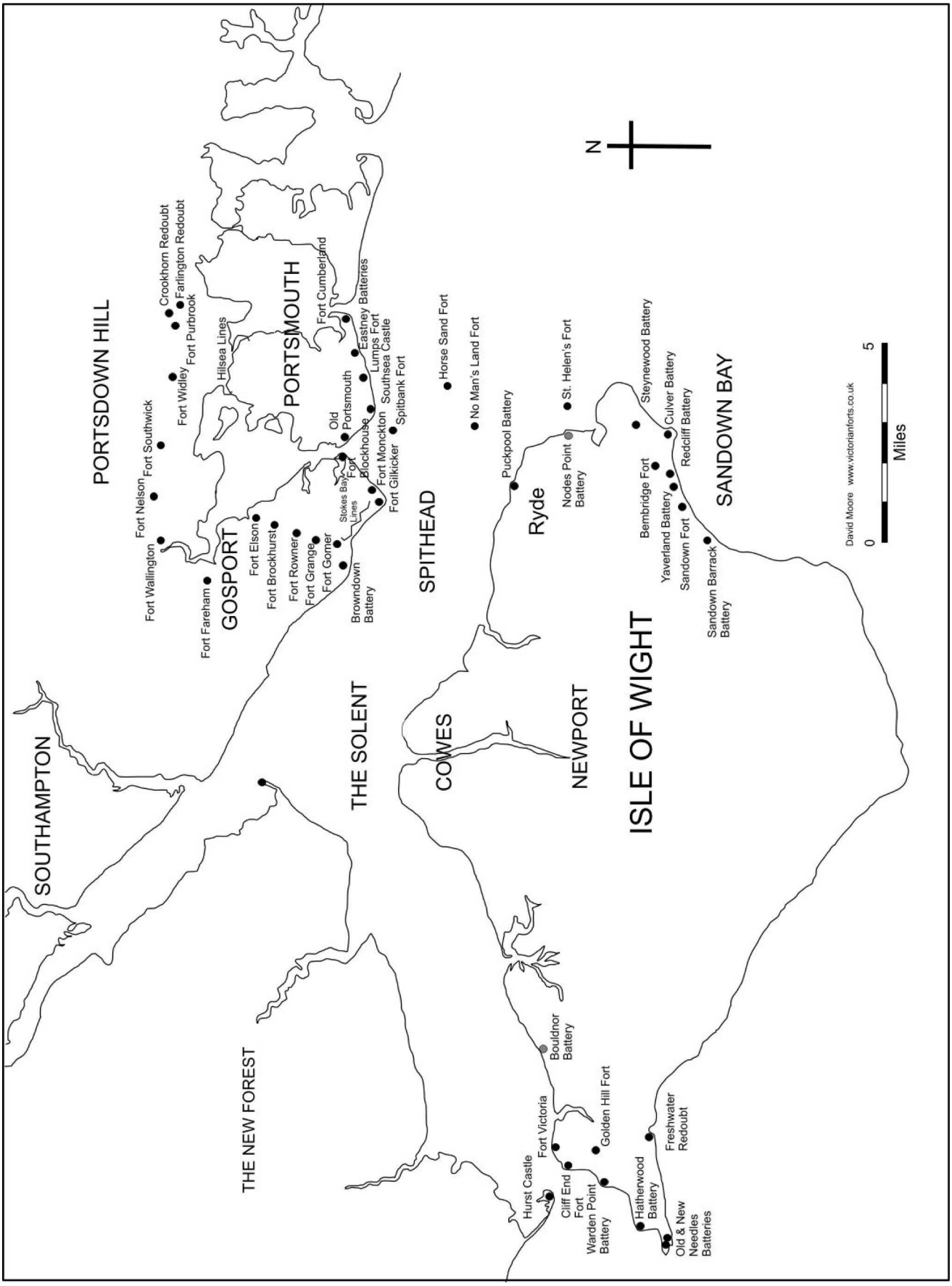
PORTSDOWN HILL
SOUTHAMPTON
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PORTSMOUTH
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NEWPORT
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ISLE OF WIGHT
SANDOWN BAY
Crookhorn Redoubt
Farlington Redoubt
Fort Purbrook
Fort Widley
Hilsea Lines
Fort Cumberland
Eastney Batteries
Lumps Fort
Southsea Castle
Spitbank Fort
Fort Nelson
Fort Southwick
Fort Wallington
Fort Fareham
Fort Elson
Fort Brockhurst
Fort Rowner
Fort Grange
Fort Gomer
Browndown Battery
Old Portsmouth
Stokes Bay Fort
Blockhouse
Fort Monckton
Fort Gilkicker
Horse Sand Fort
No Man's Land Fort
Puckpool Battery
Nodes Point Battery
St. Helen's Fort
Steynewood Battery
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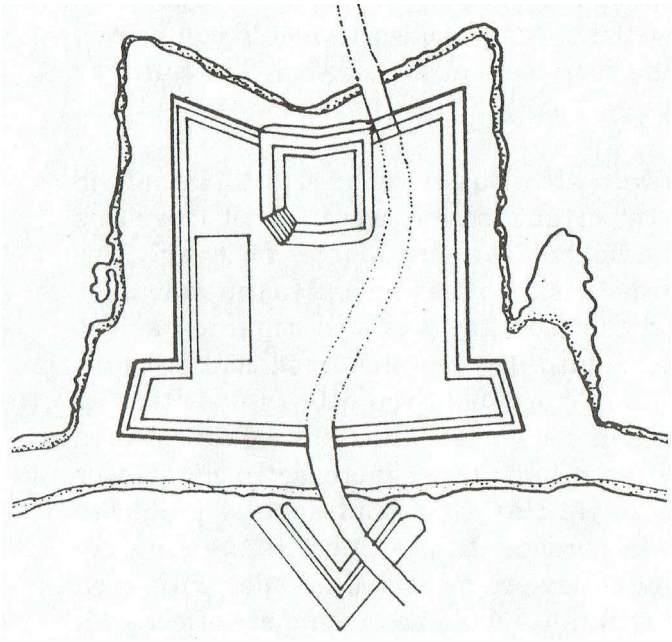
History

Portsmouth is unique, it is the only English City built upon an island and until 1940 had only one road and one railway line to link it with the mainland. The tidal channel known as Portscreek, which separates Portsea Island from the mainland was crossed by Portsbridge, and this was the key to the defence of Portsmouth. To prevent its capture by an enemy, fortifications were constructed on the northern bridgehead and later upon the south bank of the creek.

It is believed that a '*Portway bulwark*' was constructed on the northern side of Portsbridge in the reign of King Henry VIII. Certainly a fort existed at the time of the Civil War when on August 12th 1642, it was seized from the Royalists by a small band of Parliamentary soldiers. The garrison of eight were quickly routed one being taken prisoner, the others fleeing. Parliamentary forces then occupied the whole of Portsea Island and two mounts were thrown up near the fort to assist in its defence.

Plans dated 1660 and 1666 show a fort here and it was rebuilt by Sir Martin Beckman, Chief Military Engineer in 1688. During the Eighteenth Century, Britain was drawn into a number of Continental wars and a new fort was constructed under the direction of one John Peter Desmaretz, in 1746, during the war of the Austrian Succession. Intermittent warfare continued in 1754 and 1755 and the Seven Years War broke out in 1756. At this time the Board of Ordnance directed Desmaretz to improve the fortifications of Portsmouth. This work, which was completed in July 1757, included the erection of a fortified line on the northern shore of Portsea Island with new magazines, storehouses and barracks for two battalions of soldiers at Hilsea Common. Further improvements were planned in 1795 by the Duke of Richmond, Master General of the Board of Ordnance, for a large star fort at Hilsea, but this was not built.

In 1812, during the Napoleonic war, land was purchased by the Government as it was intended to fortify the northern side of Portscreek and to erect a cavalry barracks at Hilsea Green. No construction work appears to have been carried out on the new Line and some of this land was disposed of by public auction in 1820.



Portsea Bridge Fort in 1666

During the 1840's the British became concerned about the military capacity of France, and the Duke of Wellington wrote a memo on the poor state of country's defences. He wanted the defence of the naval arsenals and dockyards improved and amongst Portsmouth's defences he thought that it would be desirable to 'keep in repair the Lines of Hilsea'. His comments helped to stir up alarm throughout the country, which caused periodic 'invasion panics' over the next thirty or more years. Money was short for defence works, however and the next improvements to the Line was brought about by the opening of a railway line by the London and Brighton Company onto Portsea Island, in 1845. As a way of gaining permission to penetrate the Hilsea defences, the company was obliged to build a small redoubt, complete with drawbridge, at the point where the railway crossed the Lines.

The year 1848 brought revolution to Europe and in France, King Louis Philippe was deposed and the monarchy replaced by the Second Republic. In 1851, Louis Napoleon, nephew of the first Emperor, became President and he declared himself Napoleon III in the year following. There was much concern in Britain as to the motives and ambitions of the new Emperor and the Government was pressed to improve the country's defences. Forts Gomer and Elson in Gosport date from this period but nothing was done for Hilsea.

.

The Lines which were by then nearly one hundred years old, had deteriorated badly and although the Board of Ordnance had constructed four expense magazines in 1853, little else had been done because of government parsimony. The Commanding Royal Engineer wrote to the Inspector General of Fortifications reporting on the bad state of the Lines. He said that the original design was poor, the parapet, which was only about seven feet high, had slipped badly and that the gun positions were probably unsuitable even for light guns. The moat, which was supposed to be fifteen to twenty feet wide and six feet deep was only ten feet wide and only four to five feet deep because the sides had crumbled away. As for Portscreek, this was so choked with weeds that it was possible to walk across the channel dry shod, for three to four hours out of twenty-four. In addition, to prevent an enemy taking the Lines in the rear, he felt that rearguard defence should be provided by means of two enclosed forts.

The CRE went on to suggest that the lines could be repaired using convict labour, which would cost as little as 16/8d (83p) per day for one hundred men and allowing for six months work, this was also probably too much as there is no record of this being carried out.

No doubt with this in mind, a certain James Fergusson wrote a booklet on the poor state of Portsmouth's defences and described how he could improve the fortifications by new works at Hilsea with flanking defence on the eastern side of Portsea Island, a detached redoubt on Tipner Point, and a citadel surrounding Portchester Castle 'of considerable strength'. He also suggested a line of works at Gosport, linking Stokes Bay with Frater Lake. All these works would conform to his '*New System of Fortification*', the benefits of which he described in some detail. The military authorities were not impressed with his proposed solution but it did help to draw the public's attention to the problems that they faced.

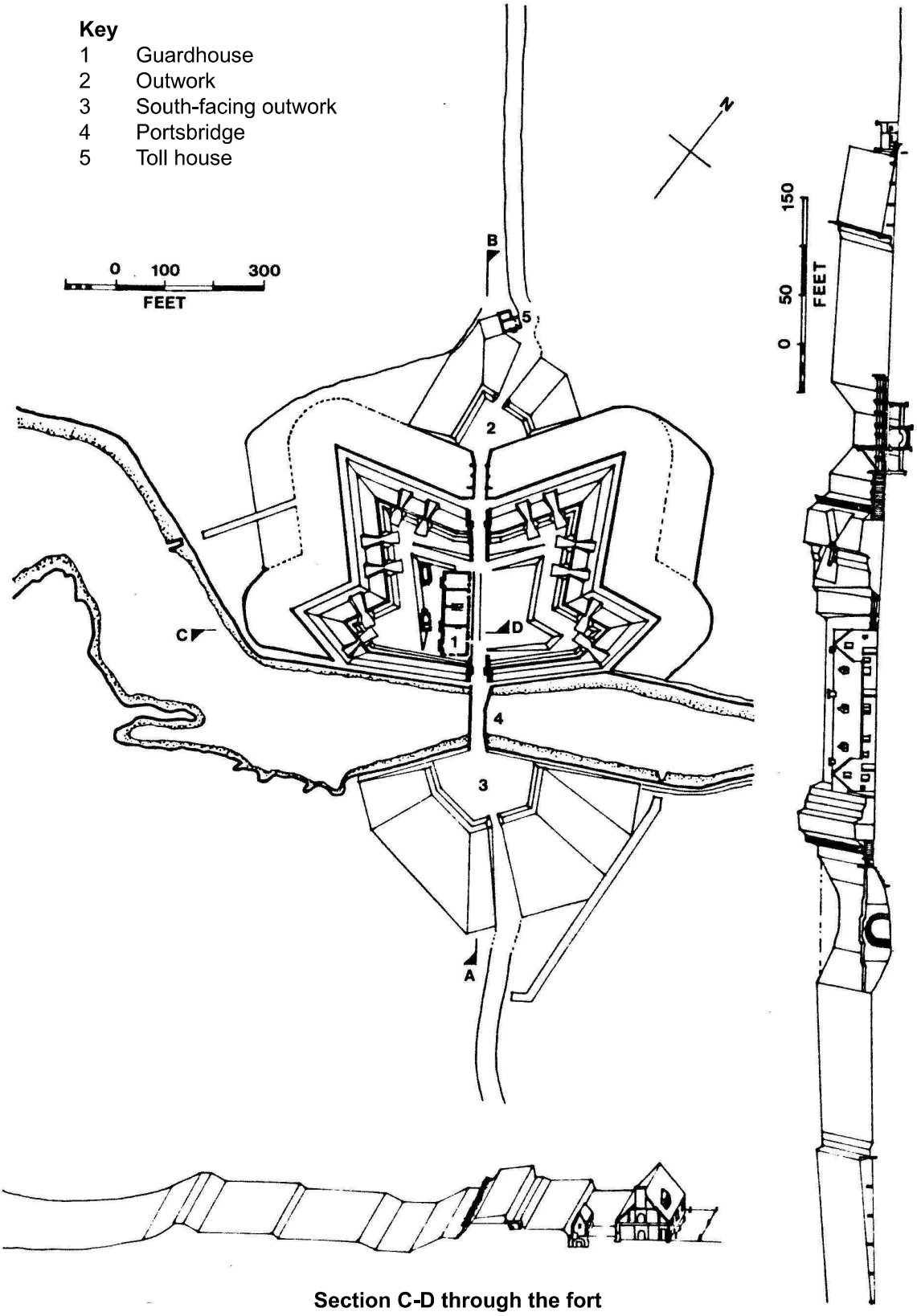
Shortly after this, Britain became involved in the war with Russia which led to the allied invasion of the Crimea and the battle for Sebastopol. Important lessons were learnt from this action, where rudimentary earthworks and batteries had held off the allied forces for nearly two years but the final destruction of the naval arsenal had led Russia to seek an end to the war.

Despite the alliance with France in the recent war, that country was still regarded as the popular enemy and the mistrust of another Napoleon continued. It was considered that a future war with France would lead to the investment and loss of Portsmouth and the imposition of onerous peace terms by that country. The Crimean war had shown up dangerous weaknesses in the British Army which had led to a general reorganisation but not an increase in manpower sufficient to protect the homeland and the empire. The Royal Navy had traditionally protected Britain from invasion, but with increased commitments abroad, its presence in the English channel could not be guaranteed and that the army would have to meet and invader with such meagre forces as could be scraped together. These makeshift units could be much more effective if they were housed in powerful fortifications and would be able to prevent the capture of the naval arsenal and dockyard until the army had been fully mobilised.

In accordance with this, the Inspector General of Fortifications began to prepare plans for improving defence works around such vulnerable points and in 1857, Col.W.F.D. Jervois submitted plans for '*completing the defence works of Portsmouth*'.

The report stated that the existing defence works around Portsmouth, Portsea and Gosport were too close to the dockyard, too small and had their fields of fire masked by buildings which had been erected outside the lines. There were no advanced works, apart from Forts Gomer and Elson and the old Hilsea Lines, which were '*Of weak trace and low profile'*. Jervois stated that new batteries should be built between Forts Gomer and Monckton and that there should be three detached forts built between Forts Gomer and Elson, the whole to be known as '*the Advanced line*'. Other works were proposed in front of Portchester Castle to prevent an enemy from bombarding the dockyard. The Hilsea Lines would be reconstructed and new works built on Horsea Island to protect Hilsea's west flank. To cover the east flank, batteries would be erected at Shut Point on the Farlington marshes and a line constructed along the eastern side of Portsea Island, in time of war. A further work would also be built on Pewitt Island, to act as a link between Portchester and the Gosport line. These proposals were accepted and work on the Hilsea Lines and the Gosport forts began in 1858.

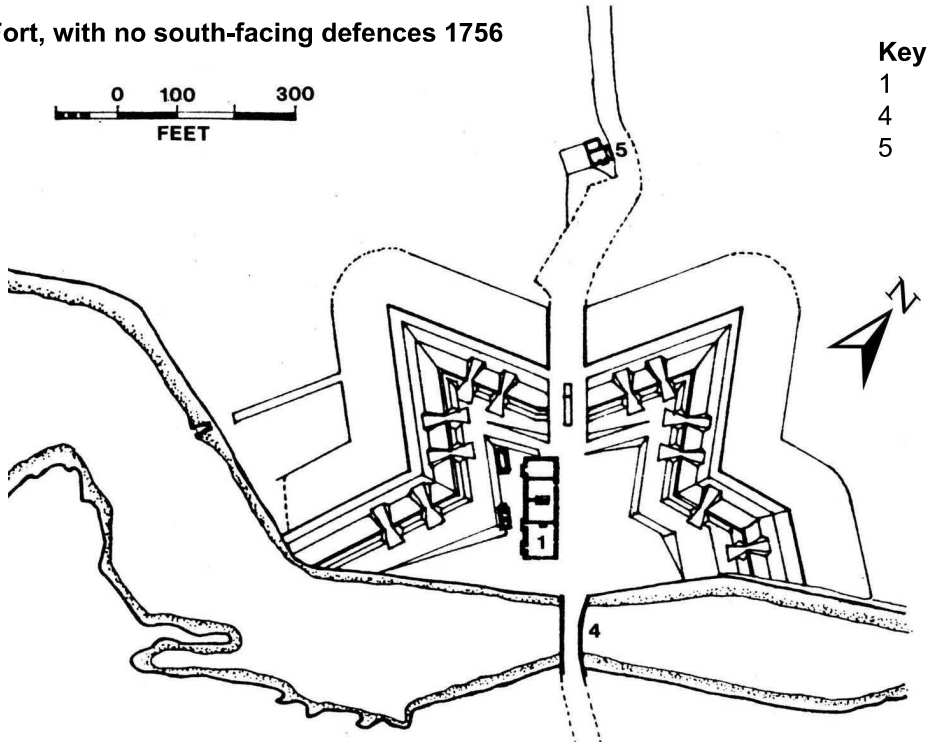
Portsea Bridge Fort 1746



Section A-B through the fort

Section C-D through the fort

Portsea Bridge Fort, with no south-facing defences 1756



At about the same time however, a new rifled breech-loading gun was put into production by Sir William Armstrong's Company and this was to be adopted by the British forces. This gun with its long range, improved accuracy and supposedly greater armour-piercing potential, caused a rethink of the designs of defence works then in process of construction. For the moment, Britain had a monopoly of these weapons but it would not be long before the French had similar guns and if they attacked Portsmouth with such a weapon, some of the defence works, including Hilsea would not be far enough out to protect the dockyard from bombardment. Enemy batteries might now be placed on Portsdown Hill where the whole of Portsea Island can be seen and yet be out of immediate range of the guns at Hilsea (assuming that they were not also modern rifled-guns). To counter this threat Jervois proposed that a new line be built on top of the hill and that Hilsea should be abandoned, saving some £235,000.

A committee under the presidency of the army Commander-in-Chief, the Duke of Cambridge, considered that a line of detached works would be preferable to a continuous line on the hill to prevent it being occupied but that the Hilsea Lines should be retained without the accessory works. They felt that the forts on the hill were essential, but only Hilsea could prevent the enemy from actually occupying Portsea Island from the landward side.

To add to the concern, the French designed and built the first of the ironclad warships 'Gloire' and this caused a new 'panic', such that the government was obliged to call for Royal Commission to examine the whole question of the defence of the country. The construction of the Spithead and Portsdown forts, as well of a number of other defence works was the result of this Commission. As for Hilsea, the commissioners supported the retention of the Lines but with all the accessory works deleted. They also noted that a further three years would be required for their completion, which was extremely optimistic. Work had continued on the construction of the Line but they would not be finally completed until 1871. The government had made use of terminable loans to pay for the works and these loans were not paid up until the mid 1890's.

Once the Lines had been completed there was no rush to arm them and none of the Royal Commission's forts and Lines seem to have received armament until 1886, by which time these elaborate fortifications had fallen out of favour, for in the same year, Sir Andrew Clarke, then Inspector General of Fortifications, had written that '*flanking fire was of less importance, than formerly*' and that
'*deep ditches and costly caponiers can in most cases be dispensed with and much complication and expense thereby avoided*'.

The heavy guns were removed in 1903 and nothing had been done to update these defences. In 1909, a mobilization depot was created behind centre bastion, for the storage of tentage and mobile stores, and at the outbreak of the First World War, the mobilization plans called for the Lines to armed with four Maxim 0.303 inch machine guns and a complement of one infantry company and three officers. Their task was to guard the road and railway bridges against raiding parties or '*disaffected persons*' and to protect the eastern approaches to Portsmouth. Two squadrons of Imperial Yeomanry and cyclists were to patrol the country to the east of a line Farlington Redoubt - Langstone harbour and plans were also made for the construction of two armoured trains.

By 1917, the needs of the Navy demanded extra space in Portsmouth harbour and the War Department was asked to vacate the Gunwharf, which they shared with the Royal Navy. The Mobilization stores at Hilsea was converted to an Ordnance depot, at the Admiralty's expense, with extensive railway sidings, wharfage, warehouse and workshop facilities being created at a cost of some £2,000,000, to store and repair all kinds of military equipment. In 1921, this was taken over by the Royal Army Ordnance Corps, who also moved their headquarters from Red Barracks, Woolwich to Hilsea barracks, which had been vacated by the Royal Field Artillery.

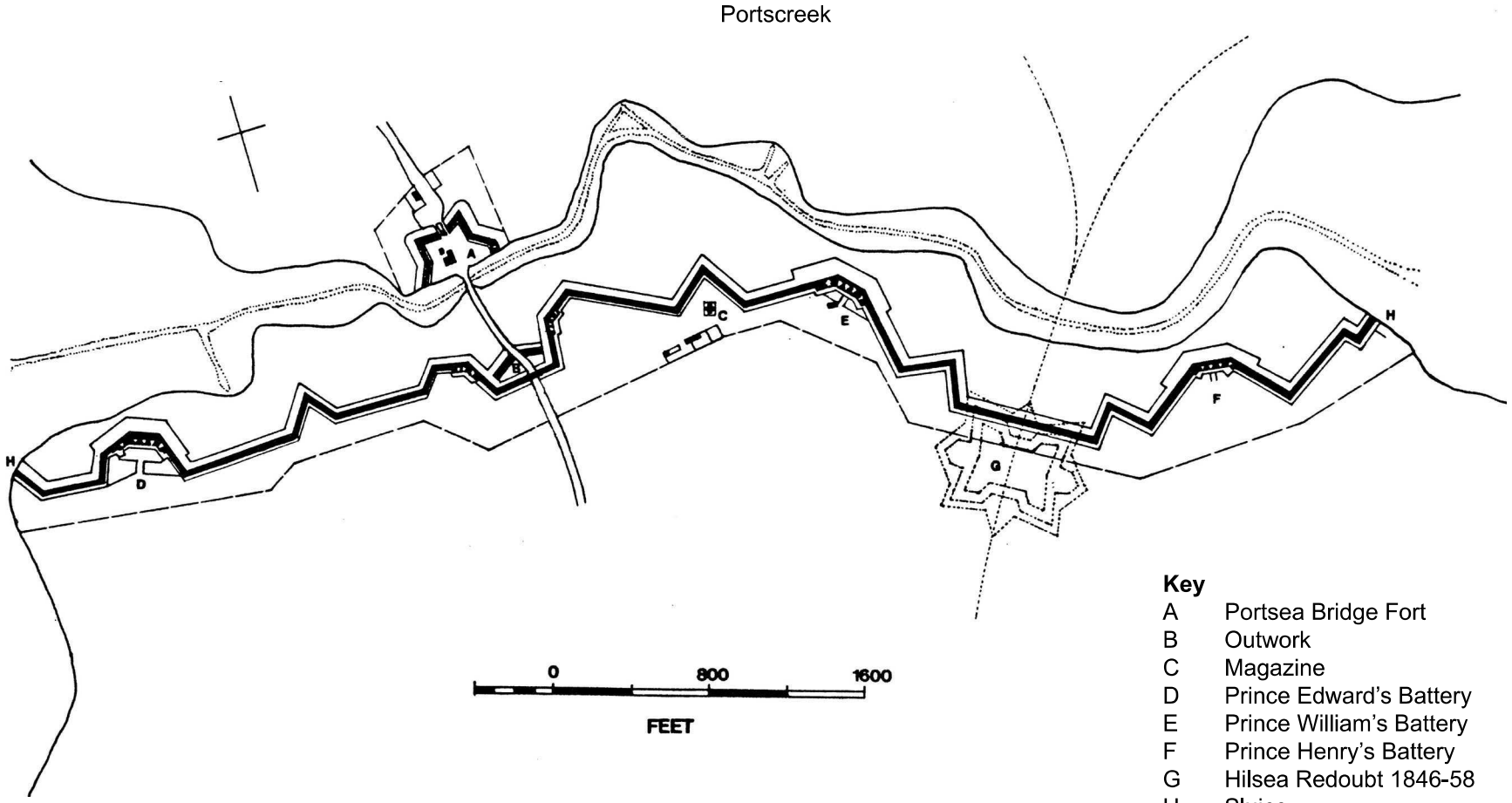
The rest of the Line was now surplus to military requirements and was gradually sold off for road widening, housing and the creation of the Municipal aerodrome in 1932. The Hilsea Arches were demolished in 1919, together with a substantial amount of west curtain, the west battery of west bastion was almost totally razed in 1933 for the construction of a bus garage and west demi-bastion was converted to changing rooms for Portsmouth Grammar School. Much of the western end became a lido in 1933 and the old Portsbridge was replaced in 1927. The 'clearance land', which was kept clear of buildings to allow the guns to sweep across the north of Portscreek, was sold off and neat rows of semi-detached houses were built on the site. In 1939, it was realised that if Portsbridge was destroyed by bombs, Portsmouth would be cut off and a causeway was built across the moat and Portscreek, in 1940. This necessitated cutting through the lines at a point almost exactly where the old London road had been.

During the Second World War, the Lines were occupied by elements of the Home Guard, the remaining casemates of West bastion being used as an emergency headquarters and an odd assortment of guns mounted on the terreplein. After the fall of France, all the crossings into Portsmouth were prepared with demolition charges and had the enemy invaded, the Hilsea Lines would have formed the last defensible line on the landward side. During the blitz, some of the magazines were used as air raid shelters by local people and Portsbridge was hit by a bomb which fortunately failed to explode. A third way out of Portsmouth was created in 1942, when the Eastern Road was linked to the mainland by a new bridge. Part of the eastern end of the Line was used by the Airspeed company and the old main magazine was used to store high-octane fuel. With the run down of the armed forces following the return to peacetime, the Ordnance depot and Hilsea barracks were closed down in the 1960's, with a small area retained by the Ministry of Defence until 1985, when most of the remaining land was purchased by Portsmouth City Council. Today, the Lines are heavily overgrown. The Council face a difficult task in trying to maintain the works in a respectable condition against the determined efforts of vandals and fly-tippers. Yet the Line is an important piece of Victorian military engineering, and should be preserved, if only to stop it becoming an eyesore for the local residents. Splendid efforts have been made by Manpower Services Commission working parties and the Elfrida Rathbone Society in the 1980s. In 2018 a single Ranger is making a valiant effort to keep the lines in oder, together with some volunteers, but it is hoped that more will be done by Portsmouth City Council to preserve this important piece of Portsmouth's history.

The Design of Portsea Bridge fort and the first Hilsea Lines

The early bridgehead forts were simple structures consisting of earthen mounts with wooden palisades and gates. Guardhouses and magazines again in wood, were the only buildings to be found within the work and the whole fortification was usually allowed to fall into complete disrepair in peacetime. This probably accounts for the reconstruction of the fort by Captain Desmaretz, in 1747. The work was entirely built of earth excepting the breastwork, which was revetted in brick. The terreplein and parapet were protected by fraises planted on the exterior talus of the rampart. A ditch eight feet wide on the landward side was crossed by a drawbridge and two places of arms secured the gateways and

Portsea Lines (Hilsea Lines) 1756-1858
John Evelegh's plan of March 11th 1811



Key

A	Portsea Bridge Fort
B	Outwork
C	Magazine
D	Prince Edward's Battery
E	Prince William's Battery
F	Prince Henry's Battery
G	Hilsea Redoubt 1846-58
H	Sluice

This plan shows the original layout of the Lines with alterations made to accommodate the railway in 1846, shown dotted. The dashed line indicates the limit of Ordnance property.

palisades, completed in wood. Armament consisted of twelve six-pounder guns mounted on platforms and firing through embrasures with the spaces between the guns being protected by earth merlons. Costs for the reconstructions came to £1,431.4.4d. In 1748, a further sum of £777.11.7 was estimated for the rebuilding of the barracks and magazine.

Although the fort was designed for landward defence from the north, provision for defending the southern approaches, was also made. The rampart was continued around the side facing Portscreek and a small outwork was thrown up to protect the southern end of the single stone-arched Portsbridge. Later, with the building of the Hilsea Lines, this southward facing defence was abandoned, as being not only unnecessary but actually dangerous, since it could be used by an enemy in possession of the bridgehead fort.

The first Lines, built in 1756-57, were little more than rudimentary earthworks of an irregular trace, the rampart being only some 7 to 8 feet in height. At intervals, and not strangely, in the flank of the angles (there were no bastions, as such), were gun batteries, each raised some 3 to 4 feet above the terreplein. A wet ditch was provided in front of the works, being fed from a sluice at each end of the Lines. This ditch was 15 to 20 feet wide and six feet deep. The three principal gun batteries or prepared gun positions, were named after three Royal princes, from west to east, Edward's, William's and Henry's. Two smaller batteries covered the entrance and its outwork. There was only a single magazine, no provisions for expense magazines being made until 1853.

London Road passed through Portsbridge fort, crossed over Portscreek and turned to enter the Lines through an outwork and then through the Lines proper. It is believed that the original gateway was fairly simple, but was replaced by a more classical stone archway in the early years of the nineteenth century, described by the contemporary Henry Slight as being of '*Grecian character*'. In 1830, the trustees of the turnpike road were given permission to construct sallyports and footpaths through the Lines, by the Board of Ordnance.

All the countryside around the Lines was rural and much of the land owned by the Board was '*let for the public benefit'* which was a convenient way of keeping the grass cut and also brought in extra revenue. According to an estimate prepared in 1757, the costs for the Lines amounted to a figure of £10,064 18s 5¾d, which included storehouses and magazines at a cost of £21,601 3s 3¾d but allowing for £1,000 to gravel the parade and to construct extra accommodation for 400 men, the cost rose to £25,301 3s 3¾d.

Hilsea Redoubt

This was built by the London & Brighton Railway Co. to the design of the Board of Ordnance and was of regular trace, with four bastions and two demi-bastions. There were no casemates but thirty-six embrasures were let into the parapet for light guns. The railway line was carried over Portscreek on a wooden viaduct and brought through the Lines on a drawbridge. Under the bridge was a caponier, loopholed for musketry, six to the north and six on either side, with a further ten set into the access passage, which came up into the parade. The fort was built in 1846 but demolished in 1858, and as it was not required for the reconstructed Lines, all the surface works were destroyed. However, in 1899 the railway track subsided into the redundant caponier and the railway company were obliged to fill it in. The editor of the 'Evening News', William Gates, wrote of the this being '*loopholed to command a view of the sea*' and thought that it dated from 1812.

The Design of the Second Hilsea Lines

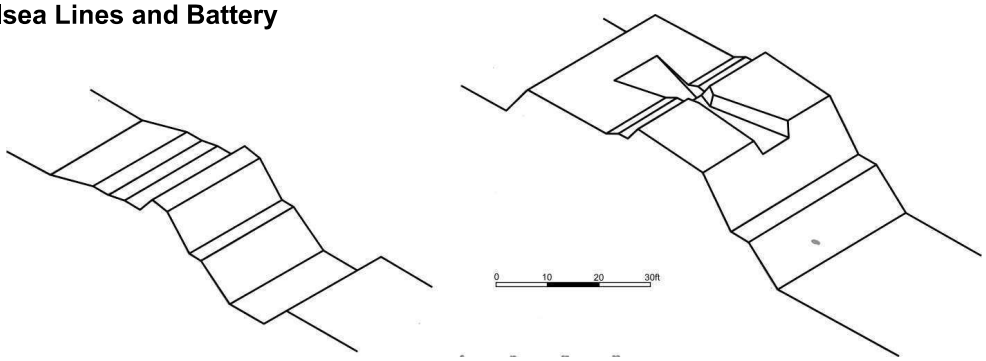
Jervois appointed Lt.William Crossman to design the details of the new Lines and the Gosport forts. He had been involved with the planning of the Great Exhibition of 1851, was later to design the Portsdown Hill forts and became Member of Parliament for Portsmouth in 1885. Portscreek, with a depth of seven feet of water was a natural obstacle at high tide, but at low water, it would be possible for an enemy to cross it and attack the Lines. It was therefore necessary to make it wider and deeper and to straighten it. The material excavated would be used to build the ramparts and as an added safeguard, dams would be constructed at either end to make the creek non-tidal. These would be in the form of skeleton coffer-dams and would only be filled with earth in time of war. The trace of the Lines was dictated by the following :

They should be free, as much as possible from enfilade fire.

They should provide heavy flanking fire over the channel.

They should protect the dams at each end of the channel and the railway and road bridges.

Section of Hilsea Lines and Battery



Outworks were to be commanded by the main ramparts which would also increase the defensive power of the Lines and permit sorties to be made.

Jervois stated that '*On the whole the bastioned trace is considered best adapted to fulfil these conditions*'. The ramparts would consist of three whole and two demi-bastions, with flanking batteries in Haxo casemates for ten guns in the former and five guns in the latter. Earth merlons placed between each gunport would protect the exposed masonry from enemy fire. The rear of each casemate would provide bombproof accommodation for seven men, giving a total of seventy men for each of the main batteries. The existing railway would be incorporated in the plan but the roadway would be repositioned about 200 yards to the west of the existing site to bring it under the fire of the flanking battery and the western outwork It was intended to create a moat at each end of the Lines outside of the creek, each with its own brick batardeau. The right flank from East Bastion to East Demi-Bastion was considered to be not so liable to attack, was not equipped with casemated guns and was about ten feet lower than the main part of the Lines. The eastern end was however, vulnerable to enfilade fire and to prevent this, a large parados was built up across the rear of the work.

To cover the northern shore of Portscreek, three outworks were to be constructed to cover the mainland side of the dams and bridges. These outworks would again be lower than the main works but this time it was to permit the garrison to rake them with fire, should they fall into enemy hands. The outworks were to be provided with three or four guns in Haxo casemates and would be equipped with bombproof guardhouses. A small fort would be constructed in the rear of the Lines, straddling what was then Cubner Lane (Copnor Road) but this was later altered to two smaller forts.

Portchester was to be occupied by an entrenchment in front of the old castle and the village turned into a defensive post. There was even a suggestion that the old Norman keep should become literally a '*keep of last resort'*.

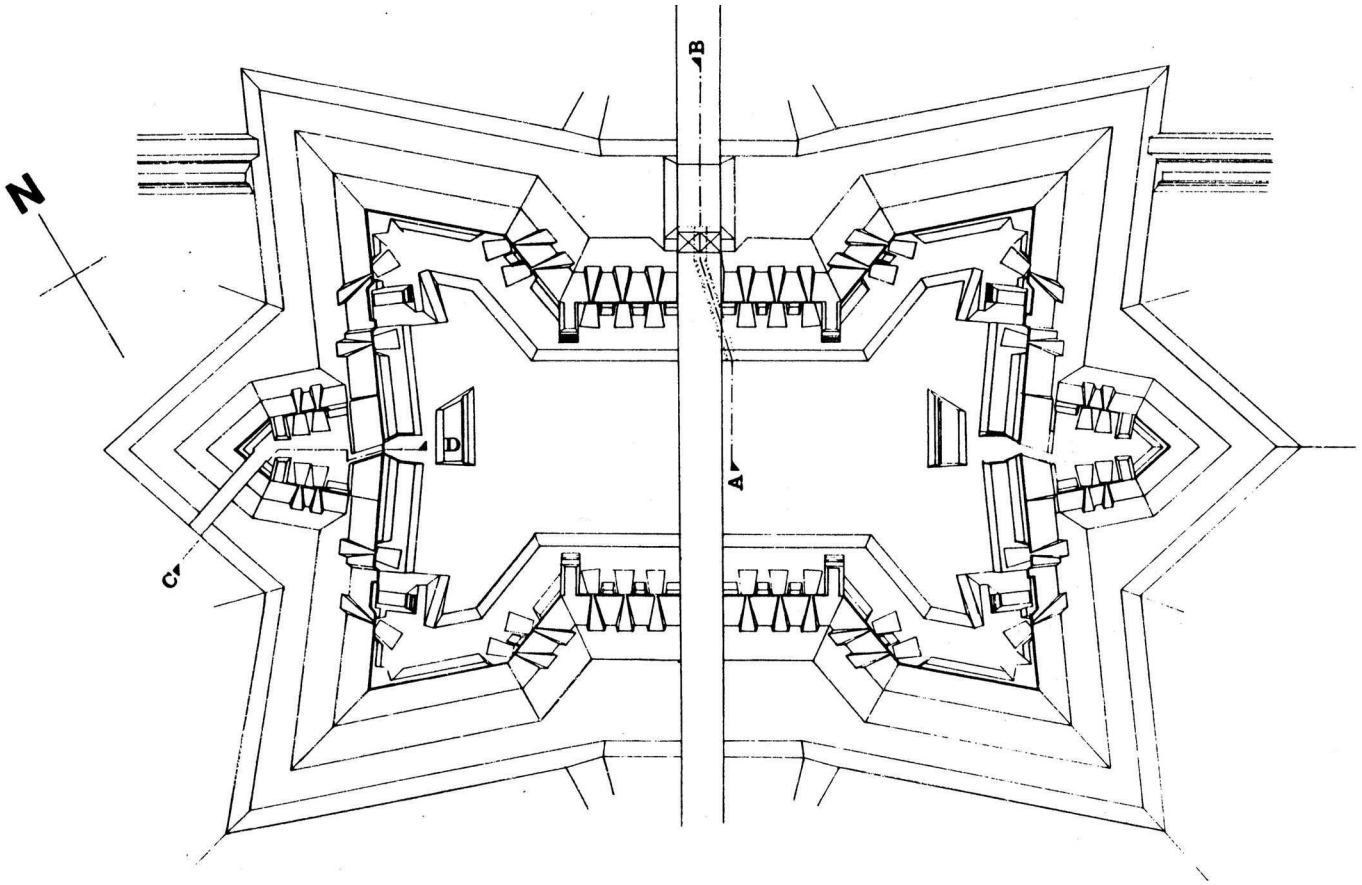
The projected costs were some £255,000 for this work but a revised estimate was prepared to accompany the modified plan and the costs were shown as £135,000. The Lines were not completed to either plan which remain in the archives but a plan dated July 1857 shows some pencilled alterations which may show the final layout, the details of which were probably altered over a period of time and certainly allowed for the moat to be made continuous.

Abandoned works: The forts in the rear of the Lines

The forts would have been about 32 feet in height with a sloping glacis to the front and sides, with a dry ditch protected by caponiers. The armament was planned to be 20 guns with bombproof accommodation for about 200 men in the rear of the work. The defensive capability of the Line was considered to be enhanced by these forts but it was stated that they could have been omitted in the first instance. No work was carried out on them and they were deleted by the Royal Commission of 1860.

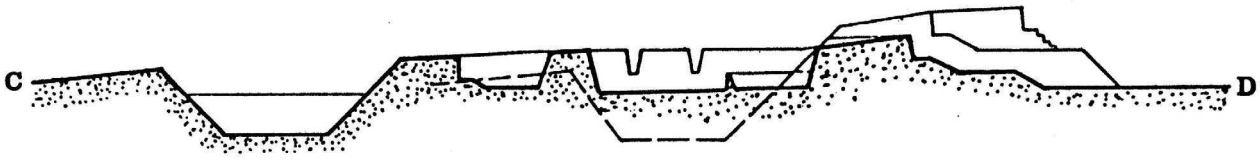
Abandoned works: Horsea and Portchester

A work on Horsea Island was to be fitted with bombproof accommodation in the face and flanks, protected by a wet ditch, with caponiers for flanking fire. This would act as a keep for two batteries. one on the west to co-operate with the works on the Portchester peninsula to cover Little Horsea Island and one on the northern shore to link with the Hilsea position. At Portchester, there was to be a ditch and rampart flanked by caponiers with the interior protected by traverses as it was liable to enfilade fire. Batteries would be sited to co-operate with those on Horsea Island. These were also cancelled by the Royal Commission.

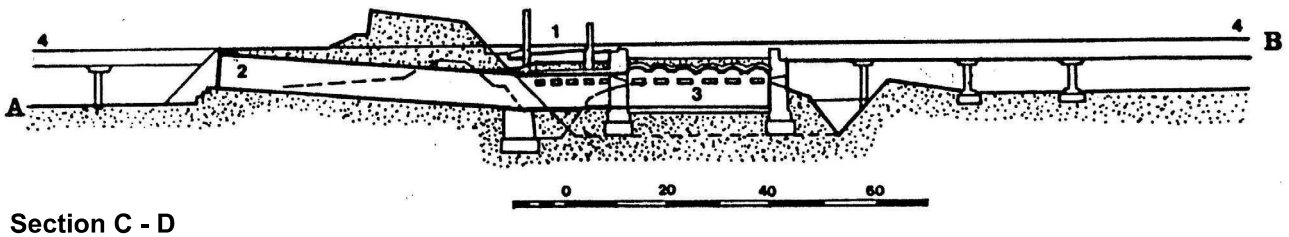


Hilsea Redoubt 1846-58

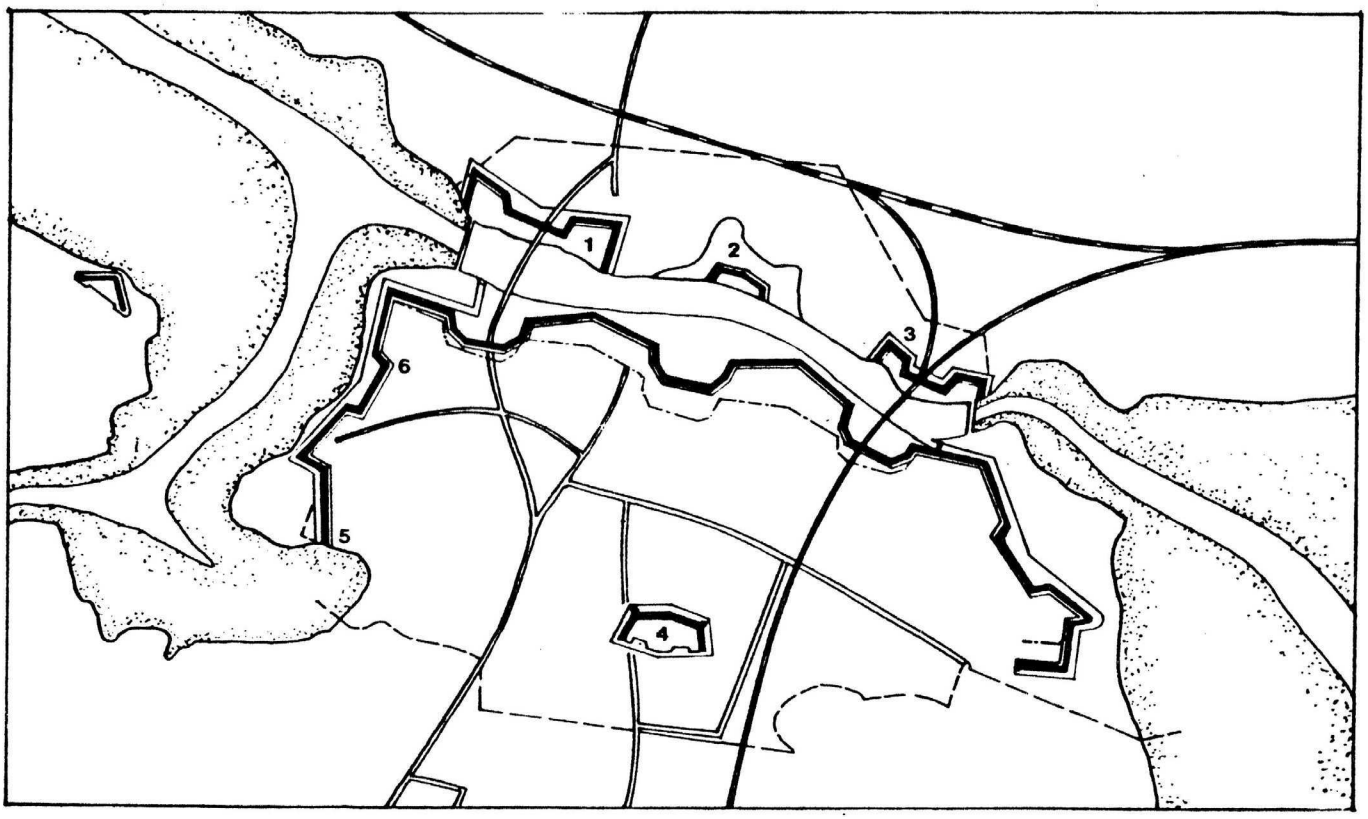
1 Drawbridge
2 Passage to caponier
3 Caponier
4 Railway viaduct



Section A - B



Section C - D

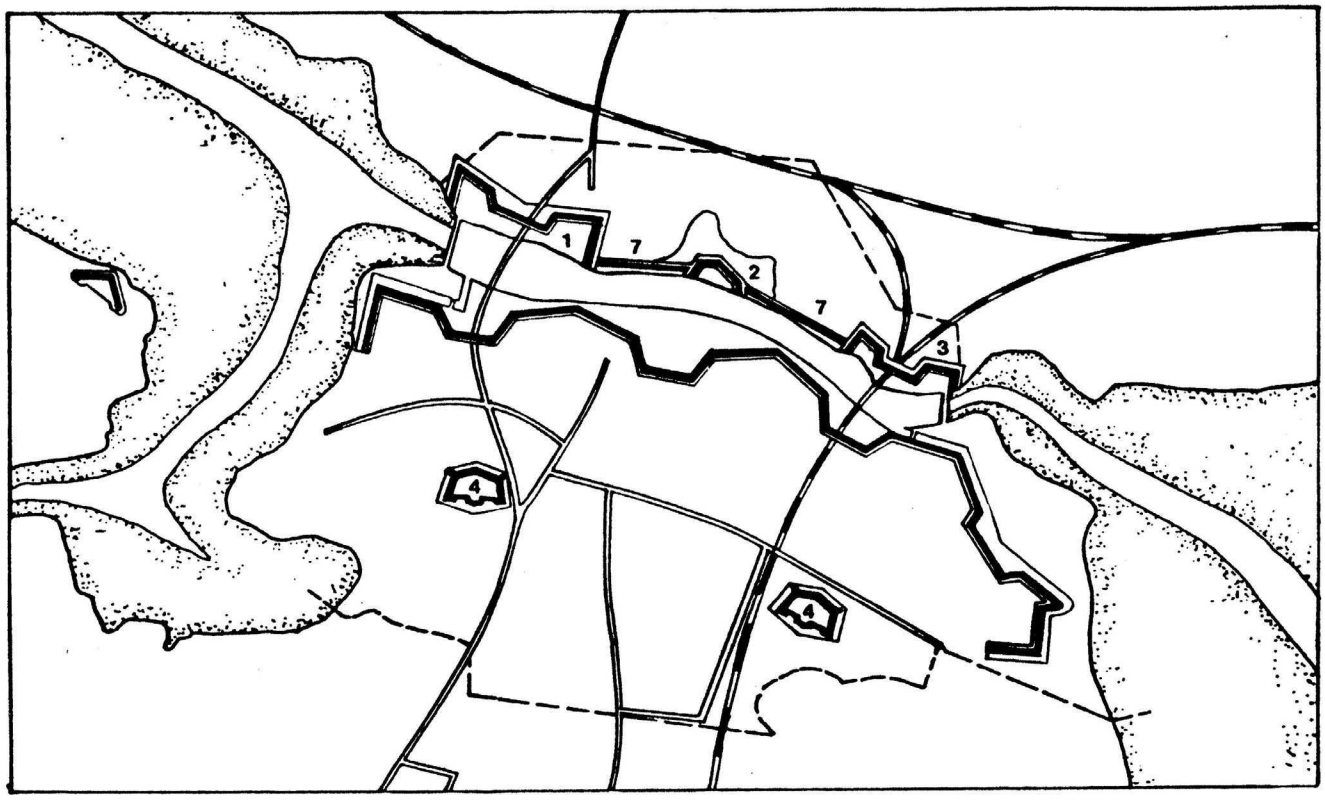


Col. Jervois' proposal for the Lines dated July 1857, with amendments
Key to both plans
1. Western outwork 2. Middle outwork 3. Eastern outwork 4. Fort(s) in the rear of the Lines
5 - 6 Western extension (later abandoned) 7. Linking line and ditch

Construction of the second Hilsea Lines

Approval for the construction of the new Lines was given in January 1858 and one William Piper of Stangate St, London SE, was awarded the first contract on 15th August 1858, for the demolition of the old lines, the clearance and levelling of the site and the construction of some of the buildings. A second contract was made with Piper in August 1859 for the building of the casemates and the entrance gateways, which was due for completion in December 1860. Materials were delayed and with the onset of particularly bad weather, the work was not finished until the following March. Tenders for a third contract were invited and that of George Wheeler of East Cowes, Isle of Wight was accepted on 18th August 1860, for £113,980. On 27th December 1861, despite efforts by the Commanding Royal Engineer, to keep him solvent, he went into voluntary liquidation. The completed work was valued at £38,691 of which £33,091 had been paid to the contractor.

There seems to have been a delay of eighteen months before the next contract was let to Messrs Jackson and Shaw, dated June 1863, but this was terminated in June the year following, for reasons unknown. An entirely new contract was let to Smith, Knight & Co., of Great George St Westminster, on 11th March 1865. One John Edwards was appointed as agent for the Hilsea works by the company but relations between him and the CRE can only be described as 'strained'. Work started on deepening the channel but the workmen were constantly interrupted by flooding. The contractor was supposed to carefully deposit the excavated material in layers upon the ramparts, but instead he chose to dump the lot in one mass. Despite complaints from the CRE, Edwards refused to co-operate and the military authorities seemed unable to make him comply. To add to the problems, Smith, Knight & Co. went into liquidation and Edwards took over the contract himself. The works had still not been finished by 1868 and attracted the attention of the press, who sensed a public scandal, observing the damage and mess at Hilsea and on Portsdown Hill.



Jervois' revised proposal dated December 1857

Reporters from 'The Times' and the 'St Pauls Magazine' visited these sites and shortly afterwards, this very critical report appeared:

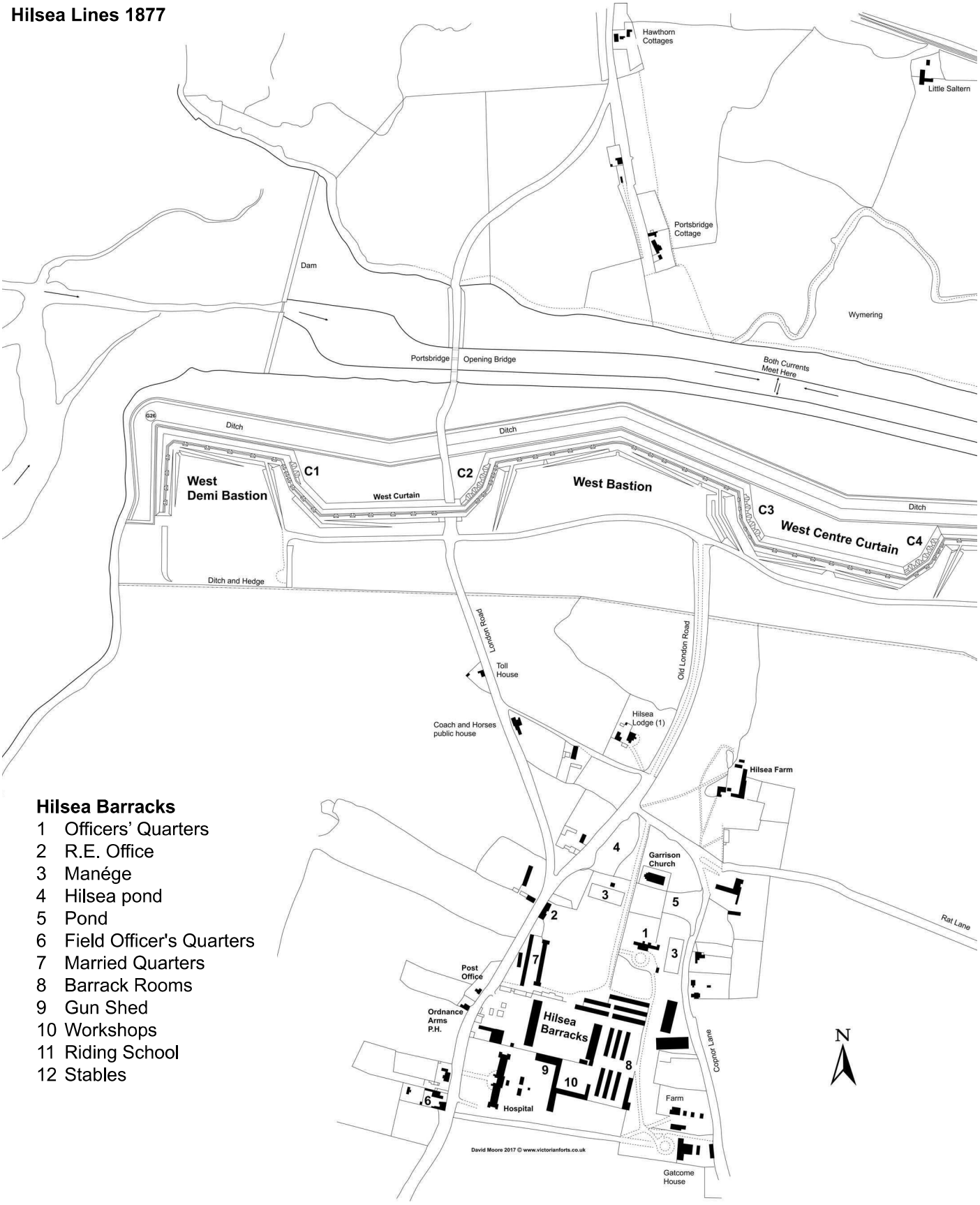
'These Lines, nearly 3,000 yards in length and mounting embrasures for ninety guns, are in substance long curtains of earth with casemated batteries on the flanks of each curtain. It has now been discovered that the embrasures have been placed so close together that the guns cannot be worked and every alternate embrasure will have to be built up. Not that even this would render them available for use in their present condition. The falling earth, intended to cushion the brick faces of the embrasures and viewed in conjunction with the great fissures which have already rent the casemates, leaves in the mind of the spectator an appalling impression of waste, folly and decay'.

On March 19th 1868, questions were raised in parliament and the Secretary of State for War, J S Pakington set up a committee of enquiry to examine all the fortifications works then in progress. This showed that there had been slippages at Hilsea but not more than would normally have been expected (whatever that meant) and that the alternate embrasures had been blocked, not because of limitations of space, but because of the protection that the extra earth afforded the battery. As with all newspaper stories, there was some truth and some exaggeration but the press missed the best story which was that the Turnpike Trustees would not accept the new Portsbridge because it was not wide enough and it had to be reconstructed to give two 12 ft wide carriageways instead of the proposed 9 ft wide ones. No other construction records have appeared and from an index of plans a final completion date of 1st December 1871 seems to have been achieved.

Description of the Second Lines

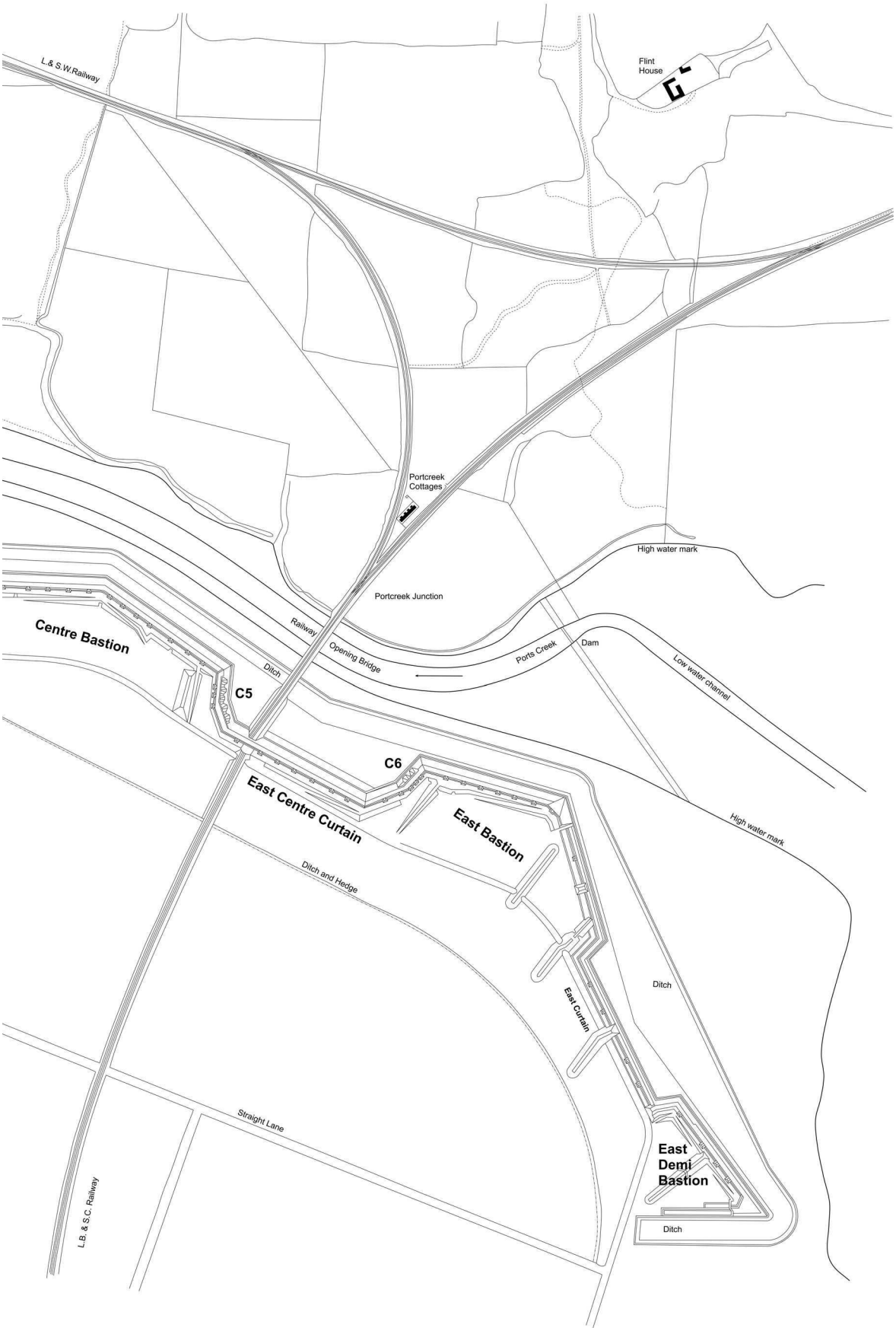
The present Hilsea Lines are located on the south bank of Portscreek and are one and three quarter miles in extent, although originally they extended half a mile further to the east. They stand to a height of 30 feet and are largely of chalk and clay with brick-built casemate batteries and other structures, at intervals. Flanking fire was provided by batteries of ten or five gun casemates, which also provided accommodation for the garrison. Access between the batteries was via the rear of the Lines, in the absence of inter-communicating passages.

Hilsea Lines 1877



Hilsea Barracks

1 Officers' Quarters
2 R.E. Office
3 Manége
4 Hilsea pond
5 Pond
6 Field Officer's Quarters
7 Married Quarters
8 Barrack Rooms
9 Gun Shed
10 Workshops
11 Riding School
12 Stables


L.& S.W.Railway
Flint House
Portcreek Cottages
High water mark
Portcreek Junction
Centre Bastion
Railway
Opening Bridge
Ports Creek
Dam
Low water channel
Ditch
C5
C6
East Centre Curtain
East Bastion
High water mark
Ditch and Hedge
Ditch
East Curtain
Straight Lane
East Demi Bastion
Ditch
L.B. & S.C. Railway

There was no rearward defence to the Lines and apart from a hedge and ditch, was completely open. Earth ramps permitted wheeled artillery to be brought up onto the terreplein and in some cases they also acted as traverses, protecting the rear of the casemates. The terreplein was interrupted with smaller traverses and expense magazines to protect the position from enfilade fire.

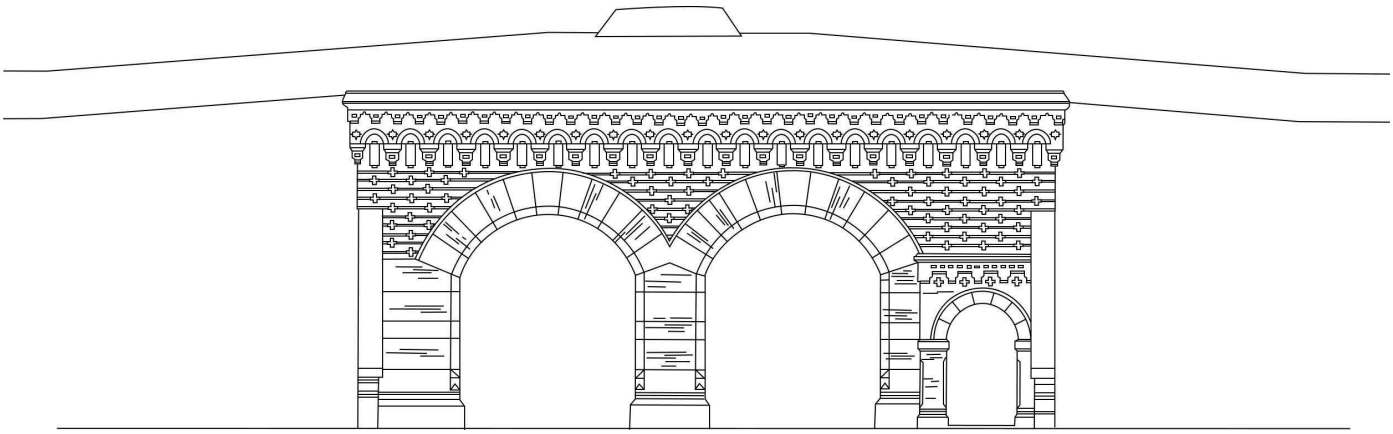
Double gateway (Hilsea Arches)
To allow the London Road to pass through the Lines at west curtain, two vehicular tunnels 60 feet long, 15 feet wide and 18 feet wide at the top of the arch, pierced the rampart. On the outside they were closed by two-leaf studded oak doors, which swung back into recesses in the tunnel, when open. A third tunnel to the west of the other two was for pedestrians and this was only 8 feet wide and 11 feet high, with a smaller two-leaf door at the northern end. The tunnel also led on to an orderly room and a store. The pedestrian tunnel emerged into an arcade at its southern end and on the east side a similar arcade led to a soldiers' room and another store. Behind these rooms was a latrine with a flushing tank over. Further round towards the flanking battery was a small door opening on to a flight of steps that led up to the terreplein. The retaining wall at the northern end was finished in polychrome brickwork with extensive corbelling and decorations of crosses, stars and bands, mostly in black with simulated voussoirs executed in red and white brick. The southern end was only slightly more restrained with similar mock voussoirs and the Royal Cipher 'VR' with the numbers '18' and '61' (later crudely altered to '67', presumably to cover the embarrassment over the long completion period) added to either side.

The base and parapet was completed in ashlar and the edge of the work was protected by a two-rail barrier. Above the centre of the arches, the terreplein was raised up some three feet to provided sufficient cover of earth and a traverse crowned the top. The interior of the building was lit by oil lamps, with other lanterns between each portal. The soldiers' guardroom was converted into a fire engine house at a later date and the rear wall was partly demolished to accommodate the appliance. Sadly all of this was destroyed in 1919 when the gateway was taken down. The gun battery to the immediate right survived intact until 1932, when it too was almost all removed to allow for the building a bus garage.

The Railway entrance
This is situated in east centre curtain and consists of a brick-lined single tunnel for two tracks, 58 feet long by 25 feet wide by 18 feet high from the top of the trackbed. The roof is held up by slightly-bowed composite iron girders and above this is a protective layer of asphalt with an earth covering, eleven feet in thickness. In the last war a pillbox was built on top of the tunnel, but this has now gone. No gates were fitted and it is not clear if or how the tunnel was to be closed off, during an attack. The northern portal is completely plain, and the southern retaining wall is flanked by casemates used solely as troop accommodation, although the extreme western one was a Master Gunner's store. Unlike the casemates in the flanks of the bastions, there was no provision for embrasures. Access across the railway line was originally by means of a level crossing, but this was obviously dangerous and in the late nineteenth century a subway was provided for pedestrians. No trace of either feature remains. The terreplein is accessed by a flight of steps in the shape of flying buttress on the west side of the railway and iron railings are fitted to the top of the casemates.

Postern or Sallyport
To allow the garrison to clear an enemy from the ground in front of the Lines, a sallyport or postern was let into west centre curtain. This is a small passageway a little over 80 feet long, 6 feet wide and 8 feet high to the top of the vault. Recesses open off this tunnel at 15 foot intervals and are probably shelters for troops beating off an attack on the tunnel itself. The northern end is closed off by a two-leaf iron shod wooden door loopholed for musketry and when the doors are opened they swing back into recesses in the tunnel wall. The southern end is closed by outward-opening wooden doors set into a concave retaining wall, which formed a place-of-arms. Above the door is a lamp bracket.

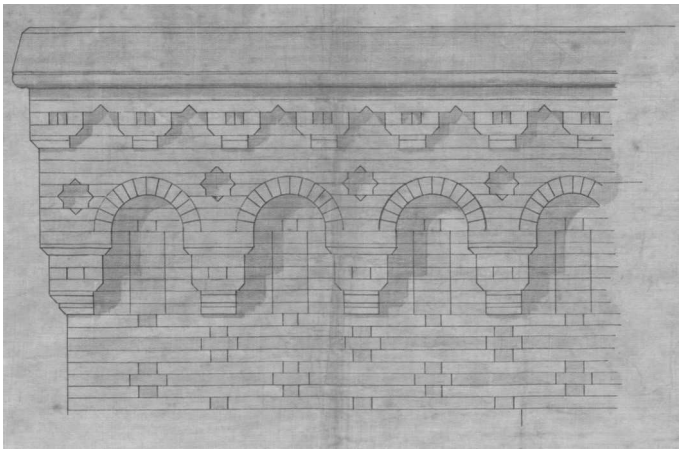
The Casemates
There were four batteries of ten guns and two of five guns each handed, depending upon which flank of the bastion they were situated. The ten-gun batteries were angled by about 15° between casemates 5 and 6 to increase the lateral range. Each battery is in two parts, with a gun battery of linked casemates in the front, and separate casemates at the rear at a slightly lower level, for troop accommodation, each with its own fireplace. Corrugated iron percussion screens separated the two parts and a wooden glazed screen above waist height,



Hilsea Arches North Elevation

closed off the rear. In the gun gallery, racers were set into the floor for traversing the gun mountings and ring bolts fitted to the roof to mount and dismount the guns. Openings were let into the front and top of each casemate, the latter venting onto the terreplein to clear the battery of smoke. Embrasures were let into the front and were framed by granite blocks for added protection.

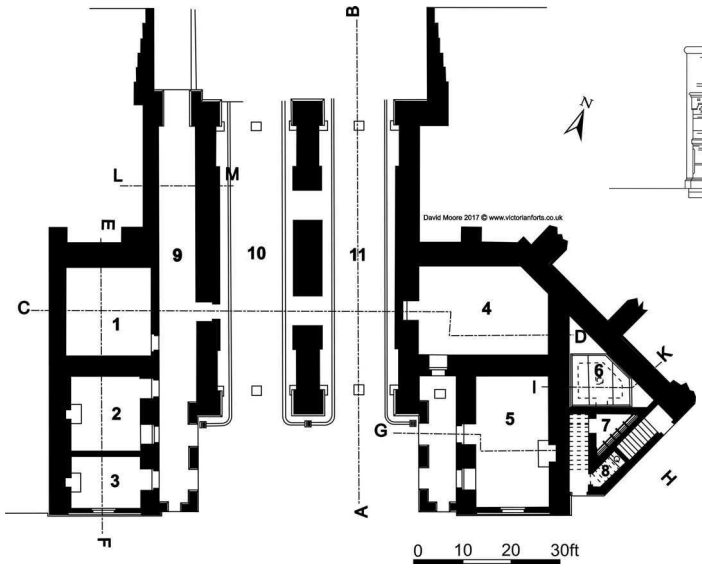
In peacetime, the embrasure was closed by a double casement window but iron doors were added to the outside, as a protection against small-arms fire in time of attack. Alternate embrasures were later bricked-up and earth merlons added which totally covered the opening. Magazines, cartridge stores and shifting rooms were placed at the ends of each battery and ammunition recesses provided, for ready use ammunition.

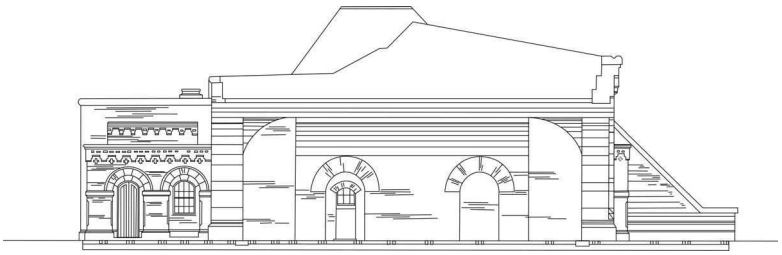


Detail of the brickwork from the original plans

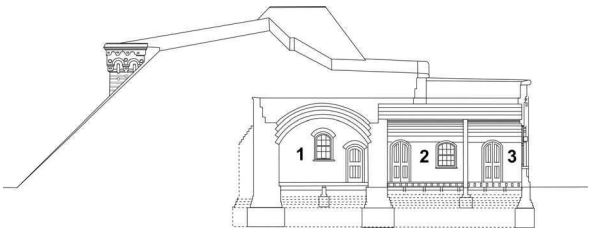
Hilsea Arches demolished in 1919

Hilsea Arches, Plan, rear elevation and sections

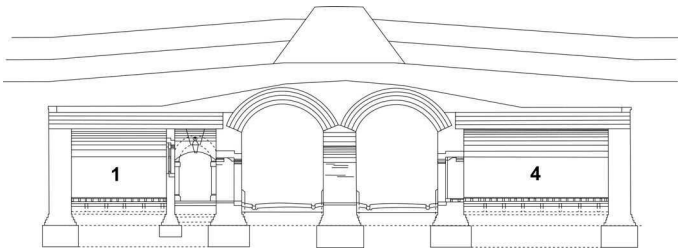




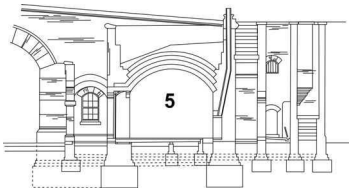
Section A - B



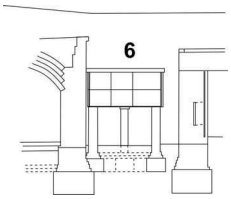
Section E - F



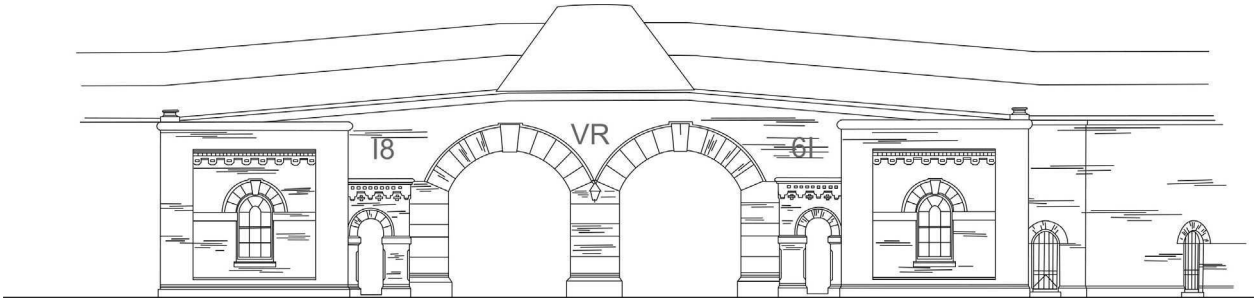
Section C - D



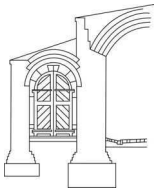
Section G - H



Section I - K



South Elevation



Section L - M

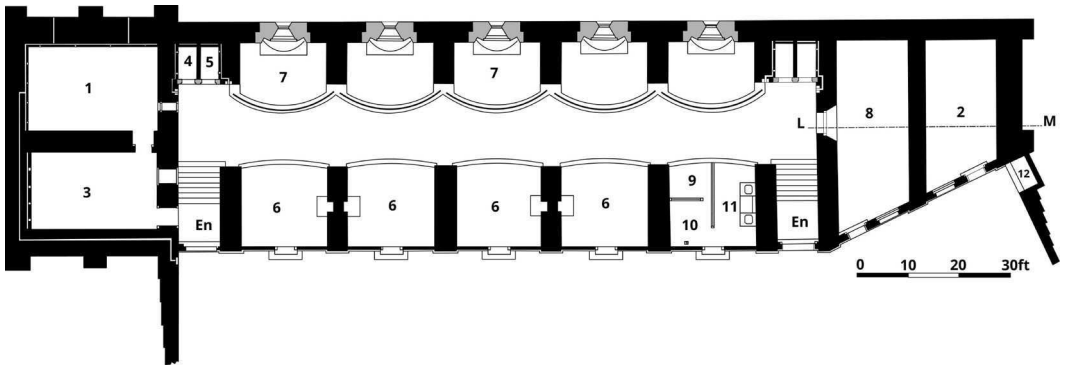
Key

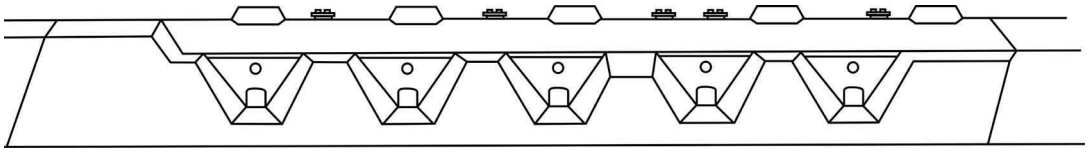
1	Royal Artillery Store
2	Orderly room
3	Guard Room
4	Store
5	Soldiers' guardroom
6	Tank room
7	Urinal
8	Steps to terreplein
9	Pedestrian passage
10	Vehicle passage (northbound)
11	Vehicle passage (southbound)

Key

1	Magazine
2	Shell Store
3	Shifting Lobby
4	Cartridge Recess
5	Shell Recess
6	Barrack Room (7-men)
7	Gun 7-inch R.B.L.
8	Artillery Store
9	Bath Room
10	Ablutions
11	Cookhouse
12	Ash Pit
En	Entrance

Casemates in flank of West Demi-Bastion
East Bastion Left Flank is a mirror image



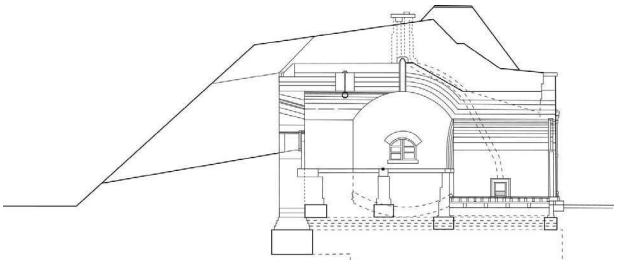


Front Elevation

Casemates in Left Flank of Bastions
Casemates in Right Flanks are a mirror image

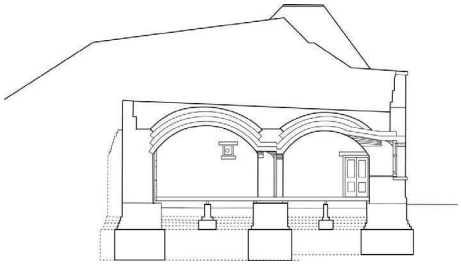
Casemates Elevations and Sections

Rear Elevation Flanks of Bastions

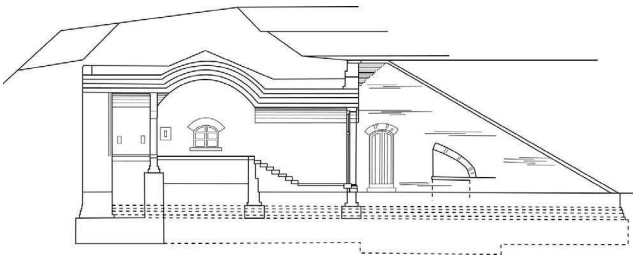


Casemates section C - D

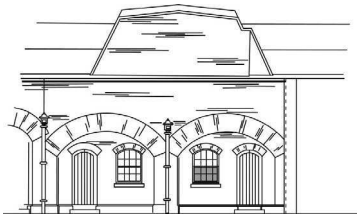
Casemates section E - F



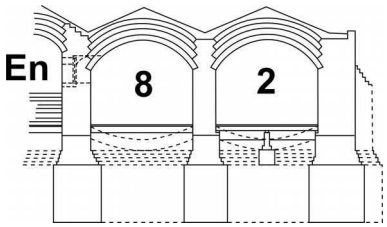
Casemates section G - H



Casemates section I - K



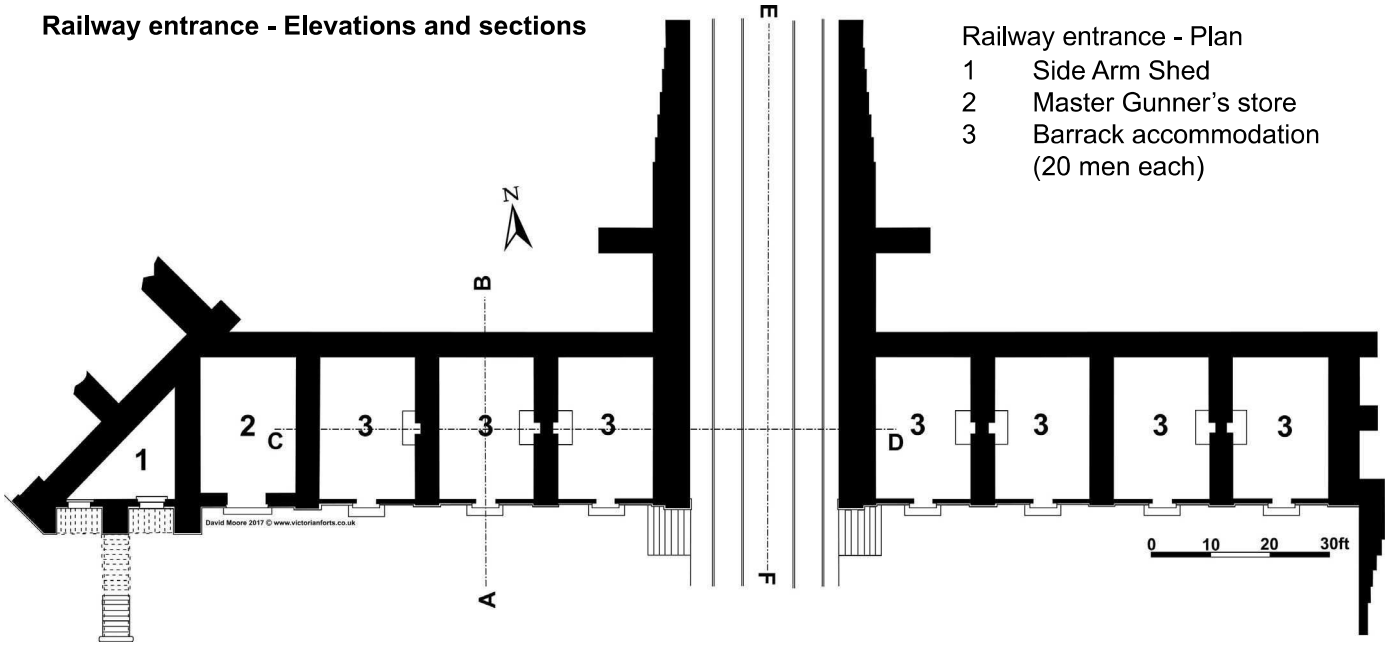
Elevation of Casemates in West Demi-Bastion and East Bastion



Section L - M of West Demi Bastion and East Bastion

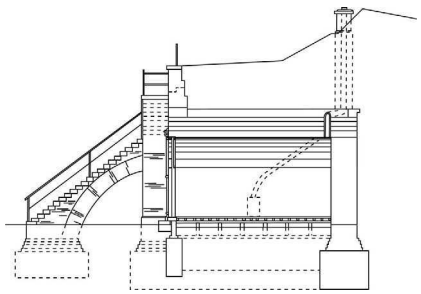
Casemates in West Demi Bastion

Railway entrance - Elevations and sections



Railway entrance - Plan

1 Side Arm Shed
2 Master Gunner's store
3 Barrack accommodation (20 men each)



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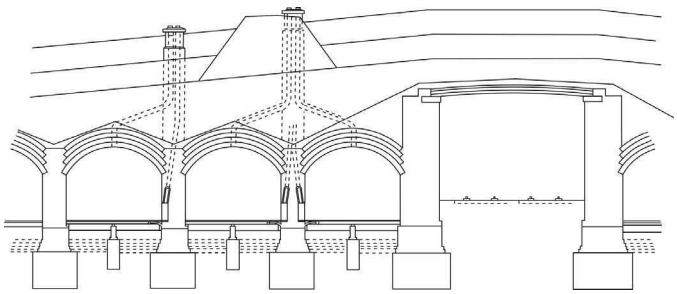
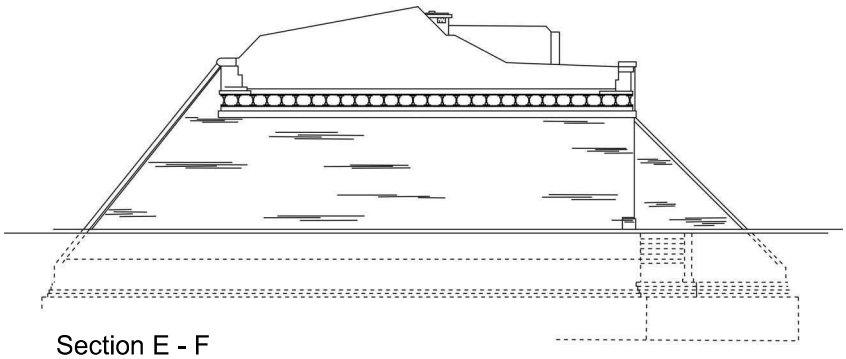
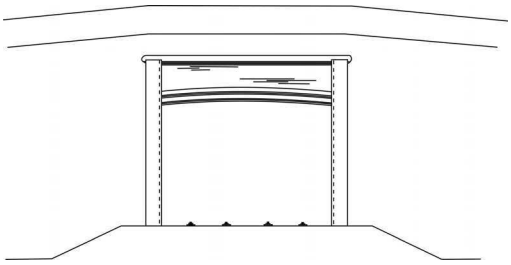


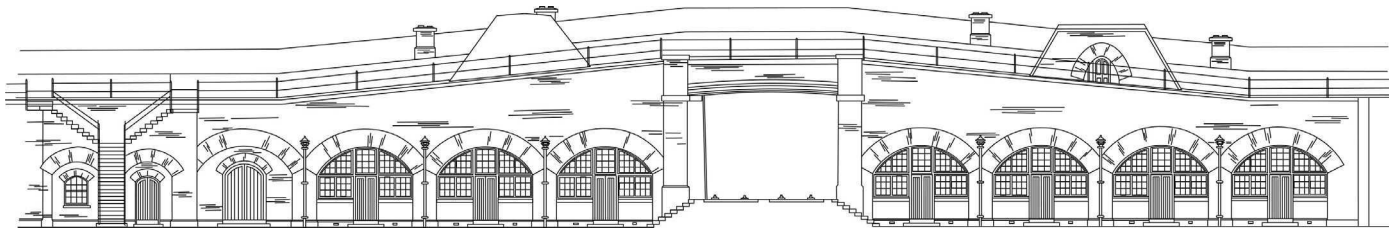
Section C - D



Section E - F

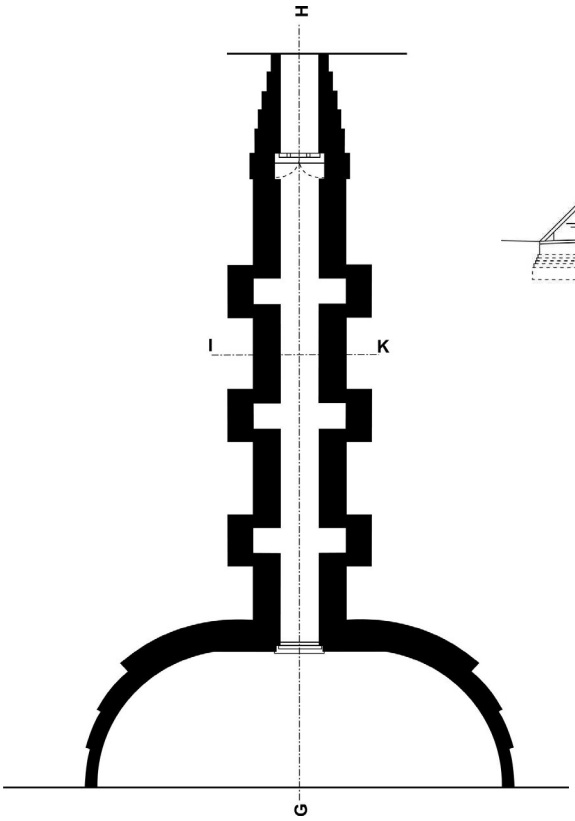


North Elevation

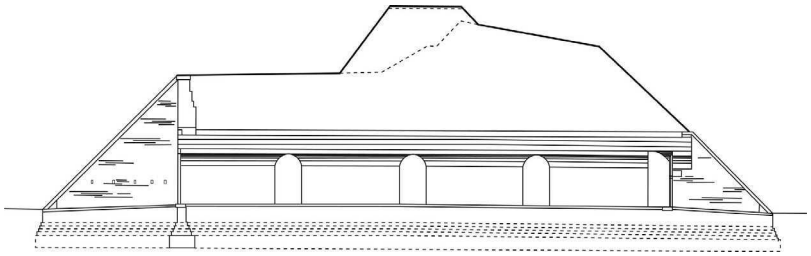


South Elevation

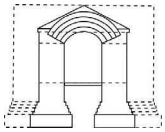
Postern or Sallyport - Plan, Elevations and Sections



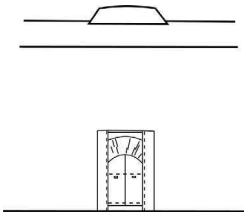
Plan of Sally Port East Centre Curtain



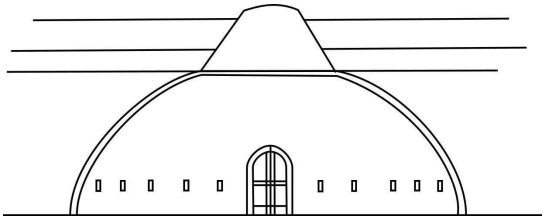
Section G - H

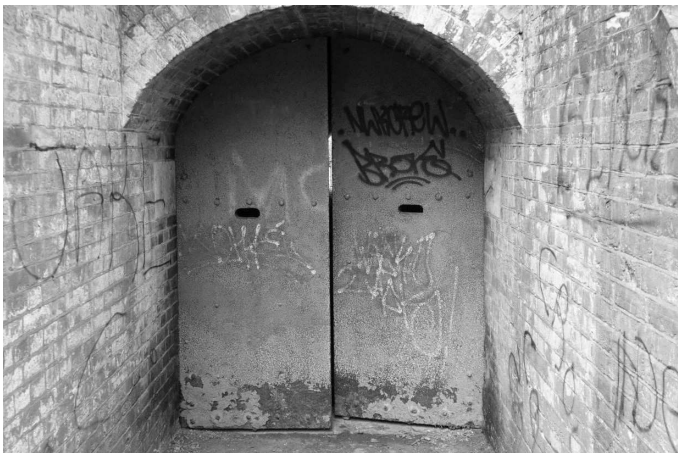


Section I - K



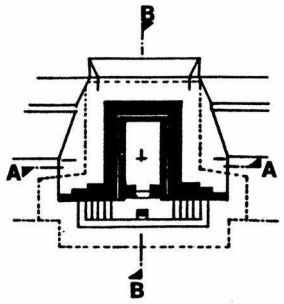
North Elevation



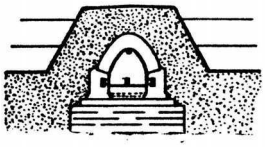


Sally Port South Entrance
East Centre Curtain in 2015

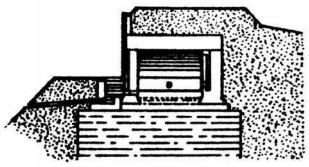
Sally Port North Entrance
East Centre Curtain



Plan

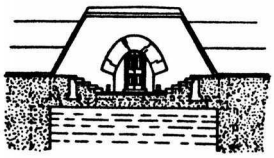


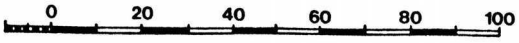
A-A



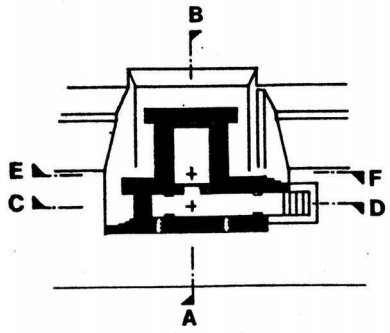
B-B

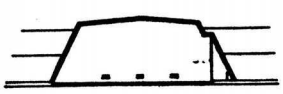
Expense Magazines



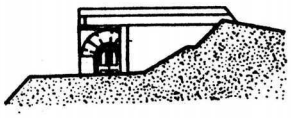


Feet

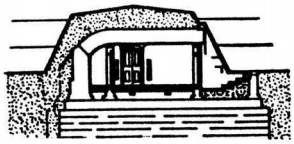




Rear Elevation

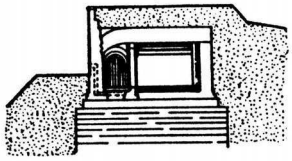


Side Elevation



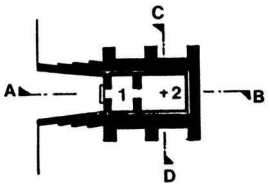
C-D

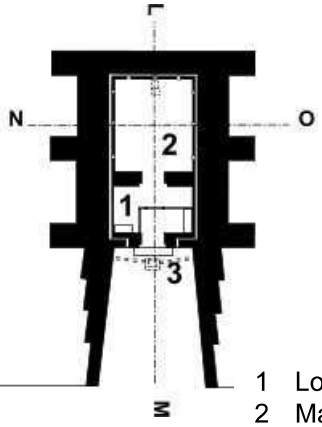
E-F

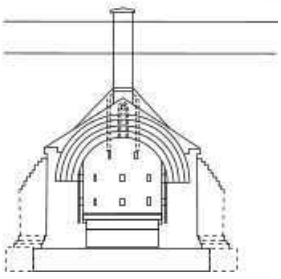


A-B

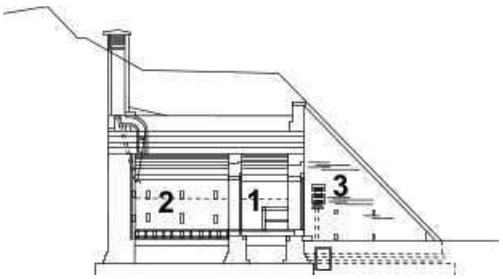
Expense Magazine with rearward cover







Section N-O

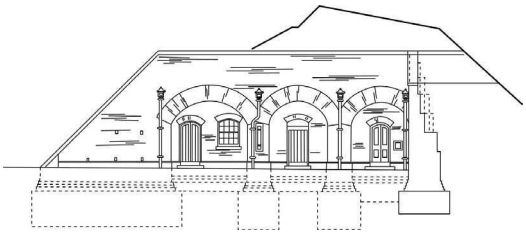


Section L-M

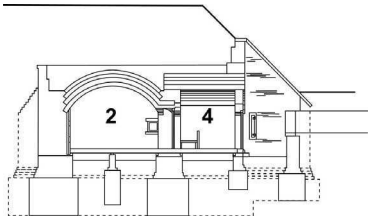
1 Lobby
2 Magazine
3 Ventilator (later addition)

Elevation

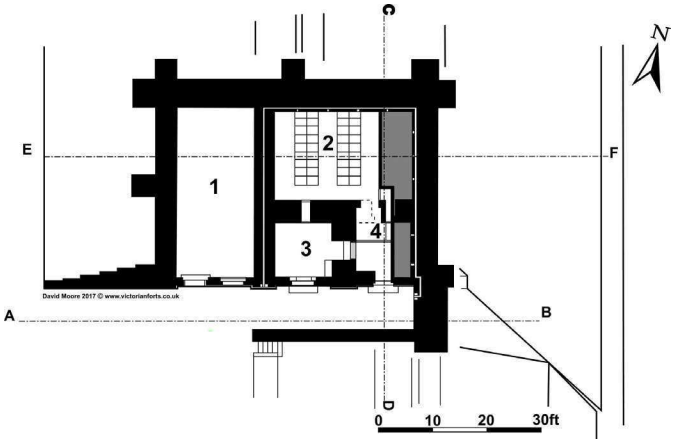
Main Magazine in East Bastion - Plan and Sections

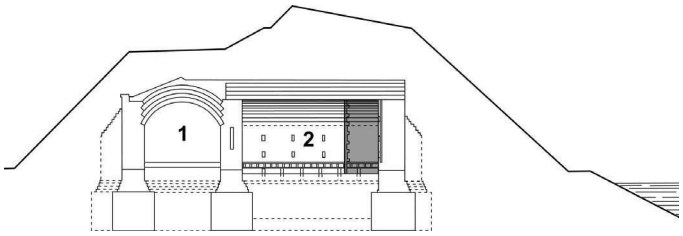


Section A - B



Section C - D





Section E - F

1 Artillery General Store
2 Magazine
3 Shifting Room converted to Shell Store
4 Shifting Lobby

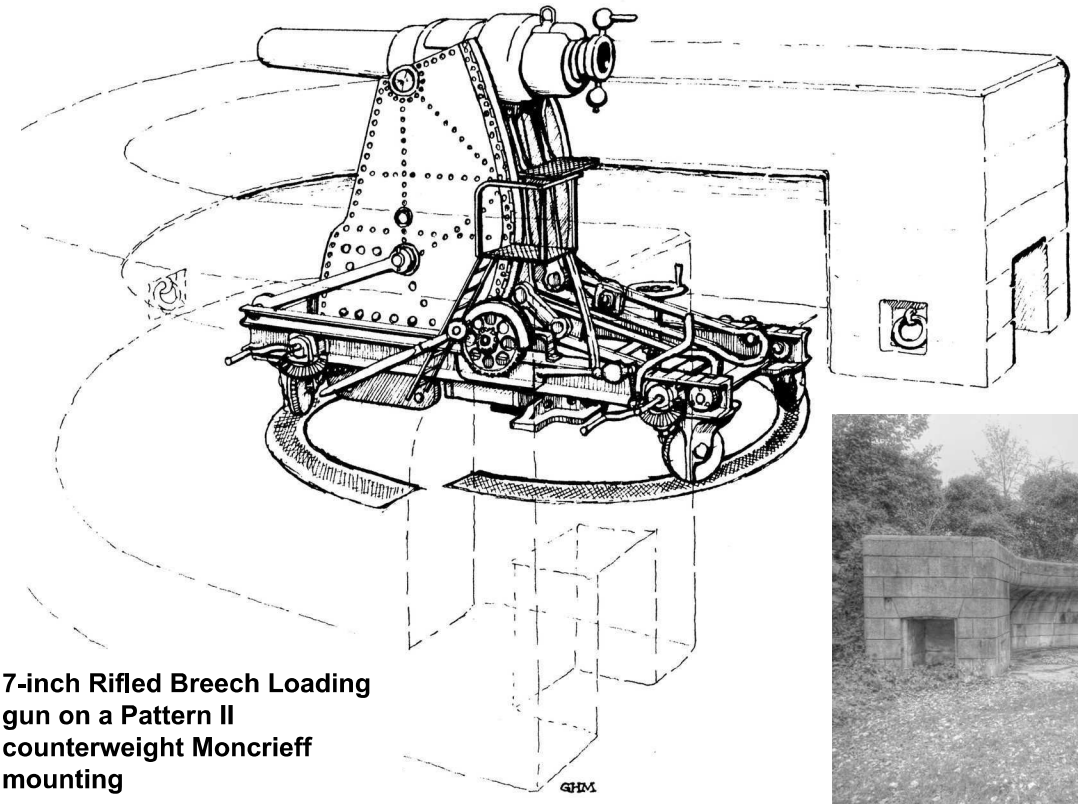
The buildings on the Line were rendered bombproof, by the standards of the day, by an earth covering over a brick vault, but to keep out the water the roof was formed into 'hills and valleys' with a covering of asphalt. The water would drain through the earth into the valleys, emerge through openings in the rear wall and flow into the drains via ornate hoppers and drainpipes.

The soldiers' accommodation was rudimentary, with ablutions and cooking facilities provided in the end casemates. The latrines were located separately under the artillery ramps adjacent to each battery and if it was inconvenient in peacetime, it would have been downright dangerous, during an attack. During the latter part of the nineteenth century and probably up to the First World War, these casemates were used as married quarters for soldiers of the Royal Garrison Artillery. It is understood that two casemates were allocated to each family and how upwards of ten children were raised in such conditions, defies description.

Main Magazine South Elevation

Magazines

The main magazine was situated under the salient of East Bastion and was divided into two main compartments, the southern half being an artillery store, the northern half being the magazine proper, and was approached by a small lobby. The circulation of fresh air was of utmost importance in keeping the powder dry and a cavity wall with air vents at intervals was provided here and in all other structures used as a magazine. The floor was originally of wood but when it became rotten through condensation, it was replaced by concrete. The report of 1868 considered that horizontal protection for magazines was insufficient and an extra three feet was added to the front wall in the 1870's. At the same time,



7-inch Rifled Breech Loading gun on a Pattern II counterweight Moncrieff mounting

Concrete pit for a Moncrieff on West Demi-Bastion

the idea of a main magazine seems to have been abandoned and it was used only to supply ammunition to the guns in the immediate vicinity. Other magazines were built at parade level at the bottom of the artillery ramps, to supply expense magazines, and these were simple structures with two compartments, a magazine and lobby. Ventilators and changing arrangements were added later to improve safety.

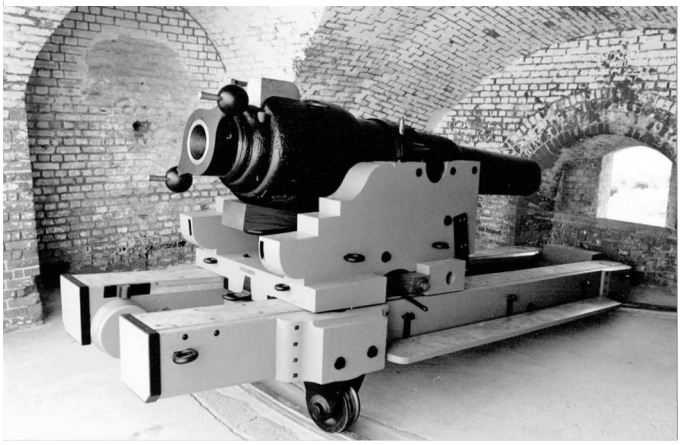
On the terreplein, thirty four expense magazines were constructed at intervals, four being equipped with lobbies to protect them against reverse fire. The spacing was usually arranged so that there would be one magazine between two traverses but this was not always followed. All these had a single chamber with the usual cavity wall ventilation and originally closed by wooden doors although most have been vandalised.

Armament

The original armament for the Lines was to have been fifty 64-pounder smooth-bore muzzle loading guns on garrison carriages in the casemates with one hundred and sixty eight 32-pounder smooth-bore muzzle loading guns on field artillery carriages, on the terreplein. The carriages were delivered to Hilsea and were stored in the casemates, although they may not have been made operational. Some of the guns may also have arrived, since two of these were unearthed in 1971. This armament was soon obsolete and the approved armament for 1886 shows more modern rifled muzzle and breech loaders allocated. On the terreplein, concrete emplacements were constructed for these weapons on counterweight ‘Moncrieff mountings and these were sited at the salients of each of the bastions. All the mountings were of the Mark II type and 7-inch RBL’s were fitted to West demi-bastion, West bastion and Centre bastion, with 7-inch RML’s being fitted to the remainder. The Moncrieff mounting allowed the gun to be reloaded under cover but fired out in the open.

This was achieved by mounting the gun on long arms, the other end of which was balanced by a counterweight. Starting with the gun in the raised position, the weights being heavier than the gun, would cause the gun to stay at rest until fired. At this point, the recoil would force the barrel down, where it would be locked by a ratchet gear, in the loading position. An elevating arm ensured that it remained horizontal throughout its travel. The gun could then be swabbed out and reloaded and returned to the firing position, where the cycle would recommence.

7-inch R.B.L. gun on casemate platform (Fort Nelson)

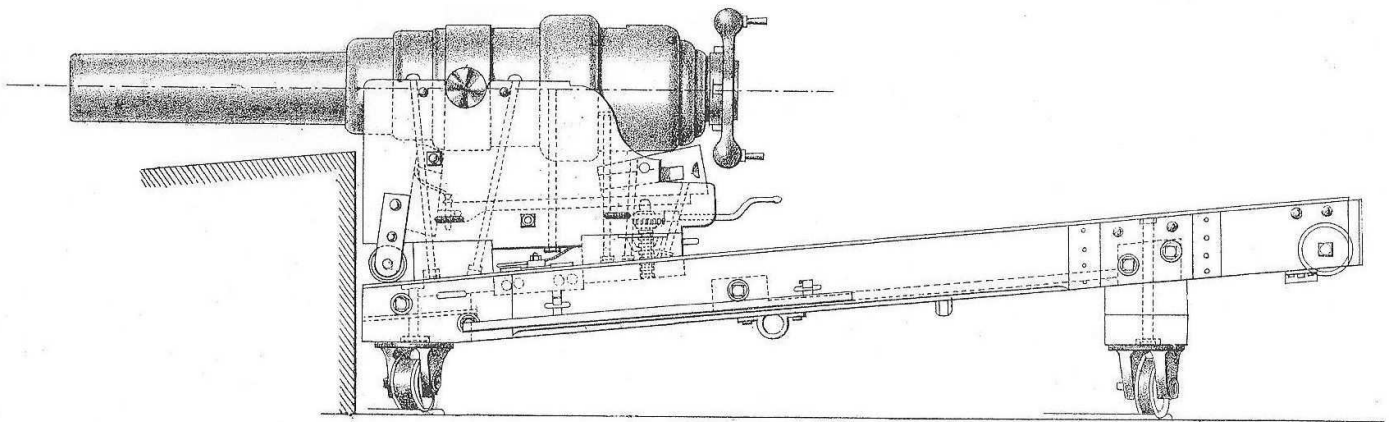


Embrasure for 7-inch R.B.L. in Centre Bastion

An ingenious mirror sighting system allowed the gun to be laid onto the target, from a raised platform at the rear of the gun mounting, without the gunlayer being exposed to enemy fire. The mounting rotated on four, toothed wheels, running on sweeper plates let into the base of the emplacement. A hand operated set of gears imparted movement to the mounting and allowed it to be traversed and a training arc, marked off in degrees allowed for the accurate positioning of the gun.

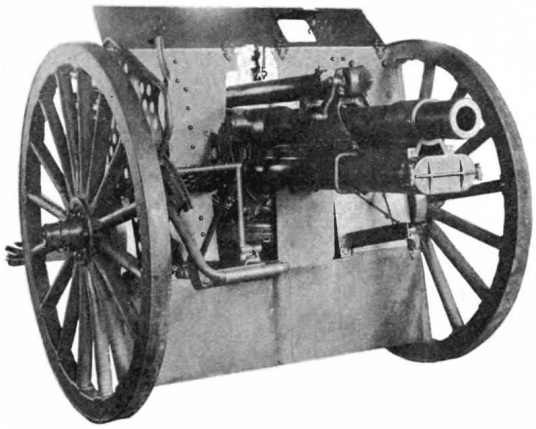
The casemate armament was to be 7-inch RBL's on casemate traversing platforms (slide) and these permitted the guns to be trained horizontally and also checked the recoil. The gun was mounted on a carriage which slid up and down the inclined plane of the traversing platform, where friction plates damped down the movement. When the gun fired, the recoil pushed the carriage back up the platform, where it came to rest. The gun could then be sponged out and reloaded. When this was finished, the gun was slid back to its firing position. Movable armament was also provided and this consisted of eight 40 pounder RML's and four 6.6-inch howitzers on travelling carriages.

All the armament was removed in 1903 and the Hilsea Lines were not rearmed except for the fitting of certain guns during the First and Second World War. Armament lists for 1912 to 1916 state that Hilsea Lines had four machine guns. Also a single 3-inch AA gun was mounted at the top of the access ramp at East Bastion, overlooking the airfield and a one pounder pom-pom gun on a movable mounting was placed on West Demi-Bastion. A 6pr Hotchkiss for AA defence was also listed in 1916. WWII armament consisted of two ex: American (or French) 75mm guns of WWI vintage, one mounted in a concrete emplacement on East Bastion (SU668040), and one on West Demi-Bastion (SU652044) close to the trig point. Both sites also have holdfasts for earlier guns, possibly a 1pr Pom Pom or 6pr Hotchkiss.



7-inch Rifled Breech-loading gun on a Casemate Traversing Platform and Carriage

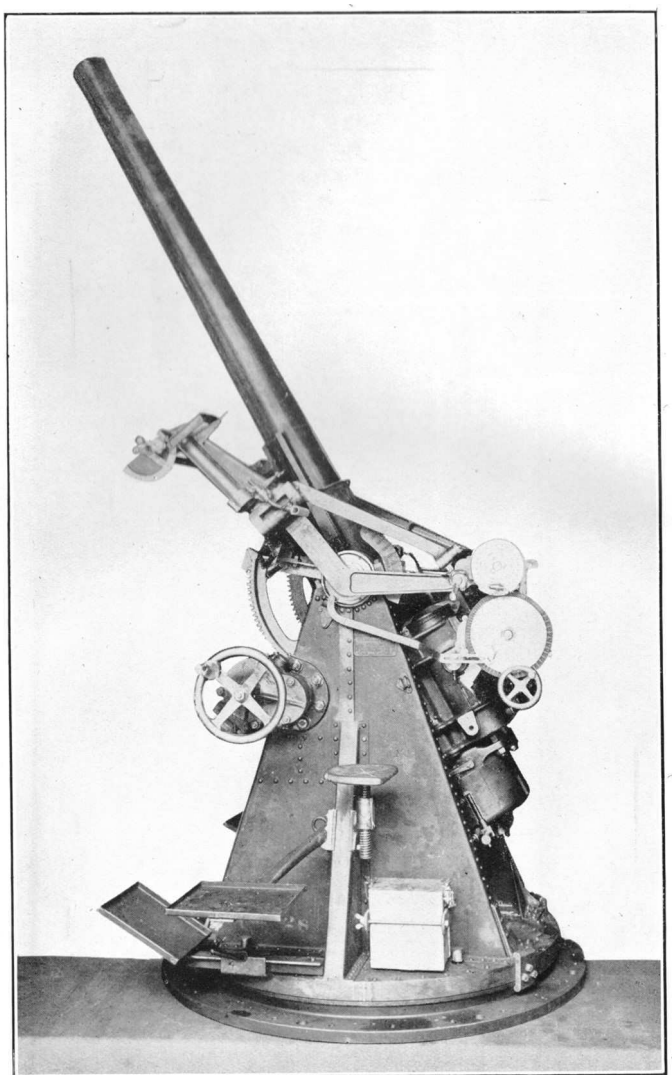
Holdfast on West Demi-Bastion, possibly for a 1pr pom pom or 6pr Hotchkis.



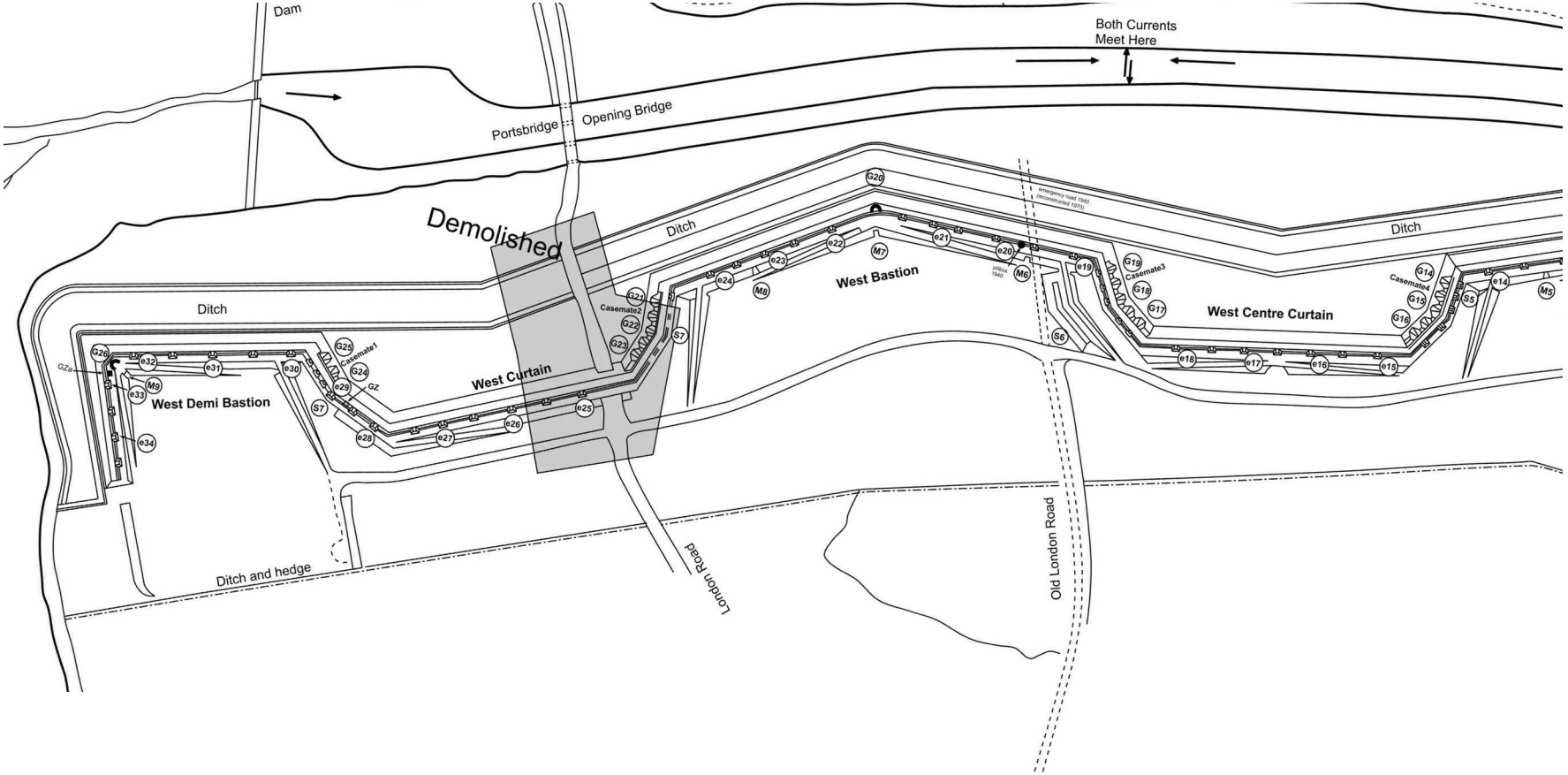
75mm Field Gun, American, in use 1916 to 1942

Bunker for an ex American (or French) 75mm gun on East Bastion. There is also a holdfast for an earlier mounting.

3-inch 20cwt Anti Aircraft Gun as mounted on East Bastion.



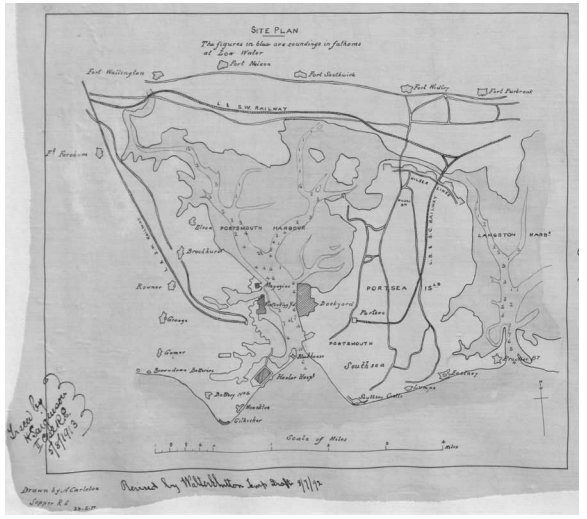
Emplacement for a 3-inch Anti Aircraft Gun on East Bastion with its eight holding down bolts.



Hilsea Lines - Details of the Work

G21 7-inch RBL on casemate slide
G22 7-inch RBL on casemate slide
G23 7-inch RBL on casemate slide
G24 7-inch RBL on casemate slide
G25 7-inch RBL on casemate slide
G26 7-inch RBL on counterweight
Gz 75mm ex American on field mounting
Gza 1pdr Pom Pom on fixed mounting
e15 to e34 Expense Magazines on terreplein
S6 to S8 Shell stores beneath ramparts
M6 to M9 Area Magazines beneath ramparts

Key
G14 7-inch RBL on casemate slide
G15 7-inch RBL on casemate slide
G16 7-inch RBL on casemate slide
G17 7-inch RBL on casemate slide
G18 7-inch RBL on casemate slide
G19 7-inch RBL on casemate slide
G20 7-inch RBL on counterweight



Hilsea Lines - Details of the Work

G1 7-inch RBL on casemate slide
G2 7-inch RBL on casemate slide
G3 7-inch RML on counterweight
G4 7-inch RBL on casemate slide
G5 7-inch RBL on casemate slide
G6 7-inch RML on counterweight
G7 7-inch RML on counterweight
G8 7-inch RBL on casemate slide
G9 7-inch RBL on casemate slide
G10 7-inch RBL on counterweight
G11 7-inch RBL on casemate slide
G12 7-inch RBL on casemate slide
G13 7-inch RBL on counterweight

GX 75mm ex American in bunker over holdfast for 6pr Hotchkiss
GY 3inch B.L. H.A.

e1 to e14 Expense Magazines on terreplein
S1 to S5 Shell stores beneath ramparts
M1 to M5 Area Magazines beneath ramparts

Centre Bastion: Right Flank Steps to the terreplein

Centre Bastion Right Flank Casemates

Portsbridge

Prior to 1867, Portscreek was bridged by single span wooden or stone structures maintained by the trustees of the turnpike road, although probably they were pre-dated by a ford. When the London Road was repositioned, it became necessary to open Portsbridge and allow gunboats to pass into Portscreek to assist in the defence of the Lines. The new bridge was therefore designed to roll back horizontally in the direction of Portsmouth and leave an opening 60 feet wide.

The bridge itself was made up of three composite riveted wrought iron girders, linked by cross members and a decking of hardwood. Two carriageways 12 feet wide were formed and two pedestrian ways were carried on the outside on outriggers. The structure rested on two, stone abutments, one at each end, with a third abutment in the centre, dividing the channel into two parts. Beneath the centre abutment was the rolling gear which also acted as a fulcrum, the bridge itself being carried on three rollers. At the northern end the bridge was held horizontal by means of cams. These could be lowered by a handwheel on the north west side and the bridge would then be lower than the road. Consequently, the southern end of the bridge would be raised up above the roadway and by means of hand-operated gears, be drawn backwards, leaving the channel clear. Closing the bridge was a reversal of the procedure.

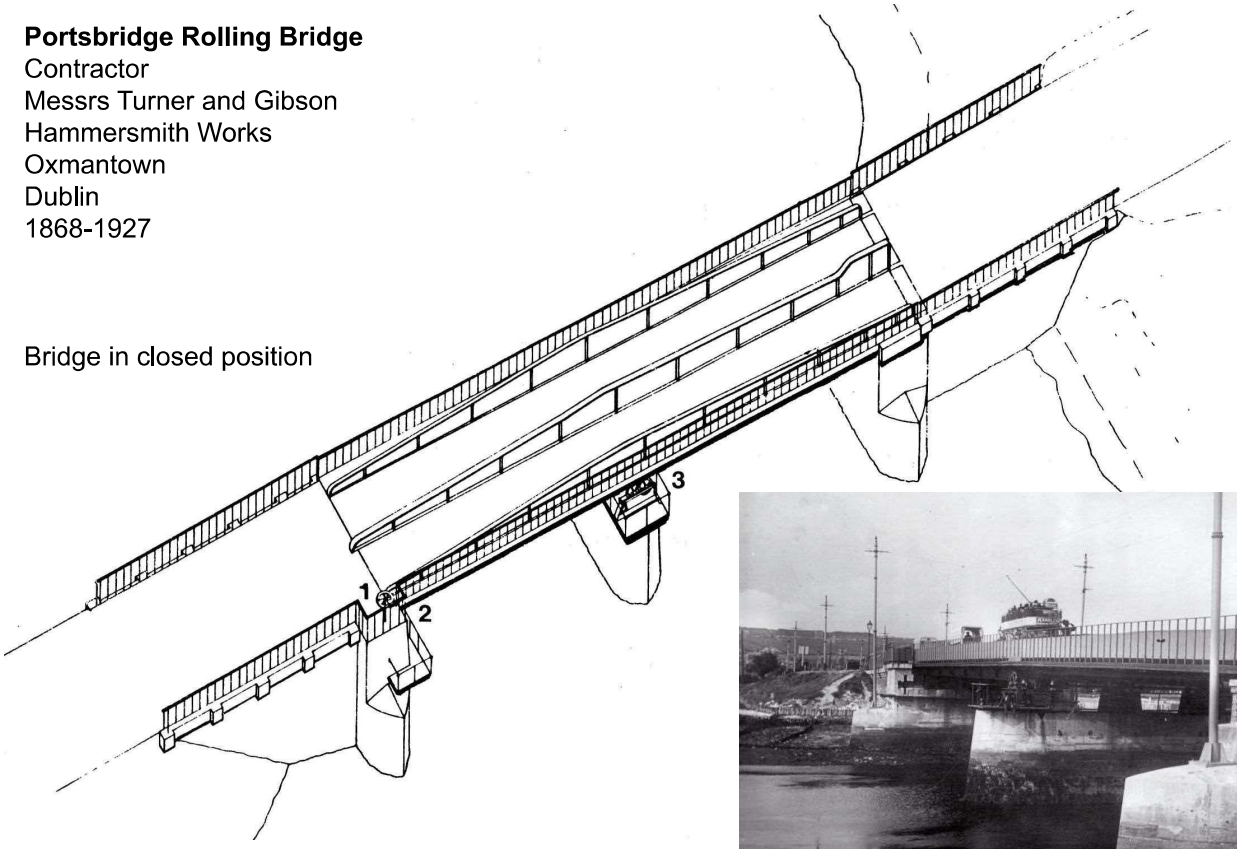
The bridge was specially built at a cost of some £5,000 by Messrs Turner and Gibson of Hammersmith Works, Dublin, who specialised in rolling bridges of this type and was believed to have been designed by Michael Kenney, foreman at the company's Oxmantown factory. During the time that the War Department were responsible for the bridge, it was regularly inspected, and in the last years, F J Webb a Sergeant Foreman of Works, would carry out this work. Once a month he would travel by bicycle to Hilsea, inspect Portsbridge, then inspect the bridges of the Portsdown forts and Fort Fareham and then report to the RE office in Portsea. The inspection of Portsbridge required him to hire a dinghy and someone to row it and examine the underside. The drawbridge mechanism would then be tested by opening the bridge and closing it. As this coincided with the arrival of market traders destined for Commercial Road, they were not pleased at the delay caused to them and resorted to some fruity language! The bridge was taken over by Portsmouth Corporation in 1904, when the Borough boundary was extended to Portscreek. The Corporation wanted to run electric tramcars to Cosham and so the bridge was reinforced and permanently closed. Gas lighting was installed and a gas main was run across the top of the bridge in 1913. With the increase in road traffic in the 1920's, plans were made to replace the bridge and it was replaced by a new ferro-concrete structure, in 1927. This new bridge was eighty feet wide and was built by Messrs Jno. Croad for some £17,000. This in turn was replaced by a wider causeway in 1970, when the M27/A27 Cosham by-pass was constructed and the wartime causeway, built in 1940, was removed.

Railway bridge

There have been three bridges on this site, the first was a wooden viaduct, built for the opening of the railway in 1846. This was replaced in 1870, by a swing bridge, with 20 foot opening spans slightly to the east of the former bridge and this necessitated slewing the tracks across to accommodate it. In the early years of the present century this bridge had become unsafe and it was replaced by the present structure in 1909, by the Cleveland Bridge and Engineering Co., at a cost of some £10,000.

Portsbridge Rolling Bridge
Contractor
Messrs Turner and Gibson
Hammersmith Works
Oxmantown
Dublin
1868-1927

Bridge in closed position

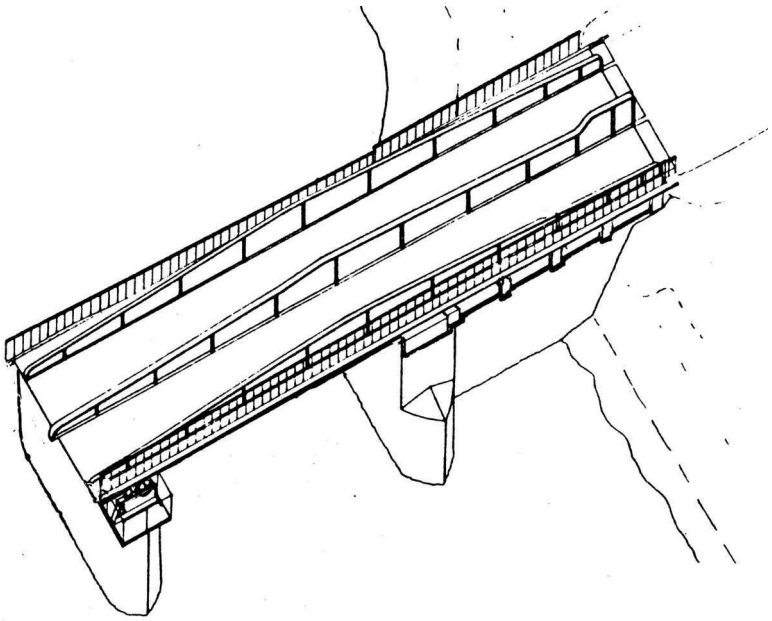


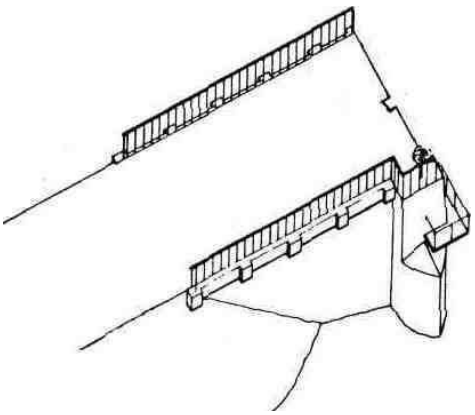
Portsbridge old postcard circa 1920

Axonometric projections of bridge in closed and open position.

Key
1 Locking mechanism
2 Locking mechanism handwheel
3 Winding gear

Bridge in open position





The joint London & Brighton and South Western Railway Committee had wanted to cross the moat with an embankment and the creek with a fixed bridge but neither the War Office nor the Admiralty would agree to this proposal. To meet the demands of the Admiralty, the bridge could be opened by swinging each half horizontally in opposite directions, so that each span lay parallel to the northern shore of the creek. The ends of the bridge rested on the bridge abutments when closed, on wooden dolphins in the open position but to keep the bridge horizontal whilst traversing, an overhead gantry and tensioner wires prevented the span from sagging at its unsupported end. By Admiralty order, the bridge had to be opened on the first Sunday in February, between 2 am and 3 am, and since it was probably not opened at all other than to comply with this order, the selection of this type of bridge is understandable. At the end of the First World War, permission was granted by the Admiralty to make this a fixed bridge and all the overhead gantries and cables were removed. The turntables and the ends of the old cables may still be seen however, upon close inspection.

The bridge was controlled by the former Portcreek junction signal box, which probably accounts for having the opening on the mainland side.

Pickett-Hamilton forts - (based on the research of Henry Wills of Salisbury).
During the Second World War, the airfield was defended partly by the Hilsea Lines and partly by these rather unusual structures, which were sited around the perimeter of the site. These 'forts' were really pillboxes which could be raised to bring them into action, or lowered to prevent obstruction to the airfield. The lifting mechanism was either hydraulic, using hand-operated pumps, or counterbalanced, using arms and weights. It seems that the latter type was used for at least two of the three forts installed at Hilsea. Each fort required 70cwt of cement, 6½ yards of fine aggregate, 12½ yards of coarse aggregate and some 33 cwt of steel in reinforcement, manholes and fittings. Costs were £230-250 each and each one took about eight days to construct. The hydraulic machinery was usually garage ramp equipment, suitably modified.

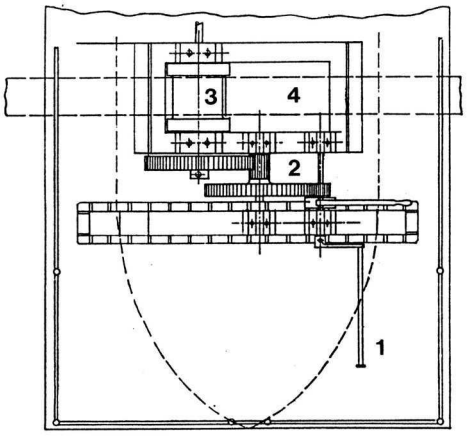
Each fort could be raised or lowered in about twelve minutes and had a complement of five men each. Recently, one of these forts was unearthed, and may be seen outside the D-Day Museum at Southsea.

Pickett-Hamilton Pillbox moved from the airfield at SU673039 to the D Day Museum at Southsea.

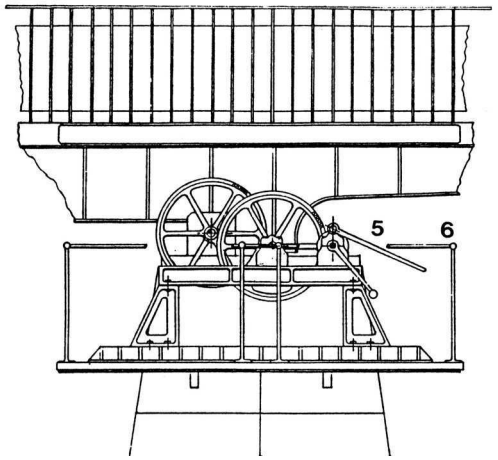
Hilsea Barracks
The barracks at Hilsea was constructed in 1756 and housed various regiments of the British Army, and the Royal Marine Light Infantry, until they were removed to Forton Barracks in Gosport in 1848. In 1854, the barracks was rebuilt and from then on, batteries of the Royal Field Artillery were in residence, alternating between home and overseas postings. By 1921, the barracks was empty and it was decided to turn it into a headquarters and depot for the newly created Royal Army Ordnance Corps. This branch of the army was created out of the Army Ordnance Corps and the Army Ordnance Department, with the title 'Royal' being added in recognition of the invaluable work carried out by Ordnance Services in the recent war. The depot was moved from Red Barracks, Woolwich on 20th October 1921.

The barracks consisted of troop accommodation, stables, hospital, manége, riding school, gun and wagon sheds. Much conversion work was required to provide decent accommodation, lecture halls, dining rooms and cookhouses. The officers' mess was situated in Gatcombe House with officers' quarters in Hilsea Lodge and for Field Officers, across the London Road in a separate house. Attached to the barracks was a garrison church, which from 1888 was a corrugated iron structure, dedicated to St Barbara, the patron saint of artillerymen. This survived until the mid-1960's when it was demolished along with most of the barracks, to make way for a housing estate. Gatcombe House survives in private ownership and one of the riding schools has been retained by Portsmouth City Council as a temporary home for exhibits for a future transport museum. Rugby Camp, built for the Militia in 1938, has also been demolished for yet another housing scheme.

Conjectural plans and sections of operating mechanism

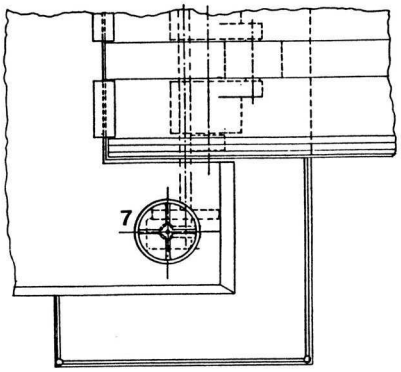


Plan **Winding Gear**



West Elevation

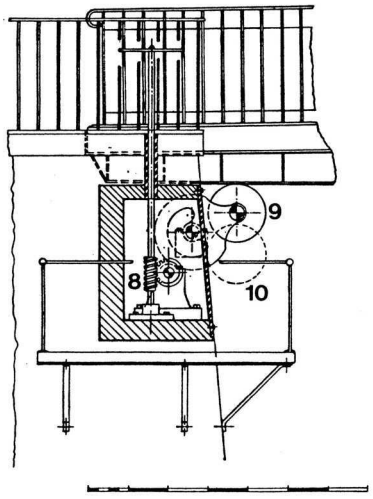
Plan

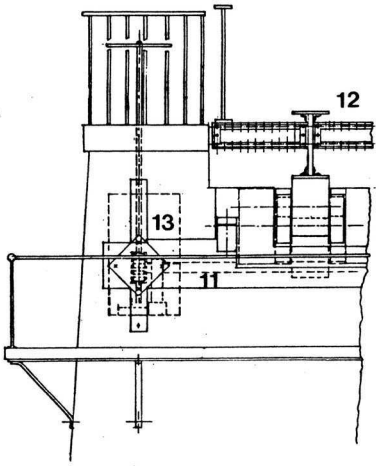


Key

1	Actuating handle
2	Reduction gearing
3	Roller
4	Roller bearing surface on underside of bridge
5	Brake
6	Handrail
7	Actuating handwheel
8	Worm gear
9	Locking cams
10	Locking cams in lowered position
11	Locking cam shaft
12	Upper surface of bridge
13	Inspection cover

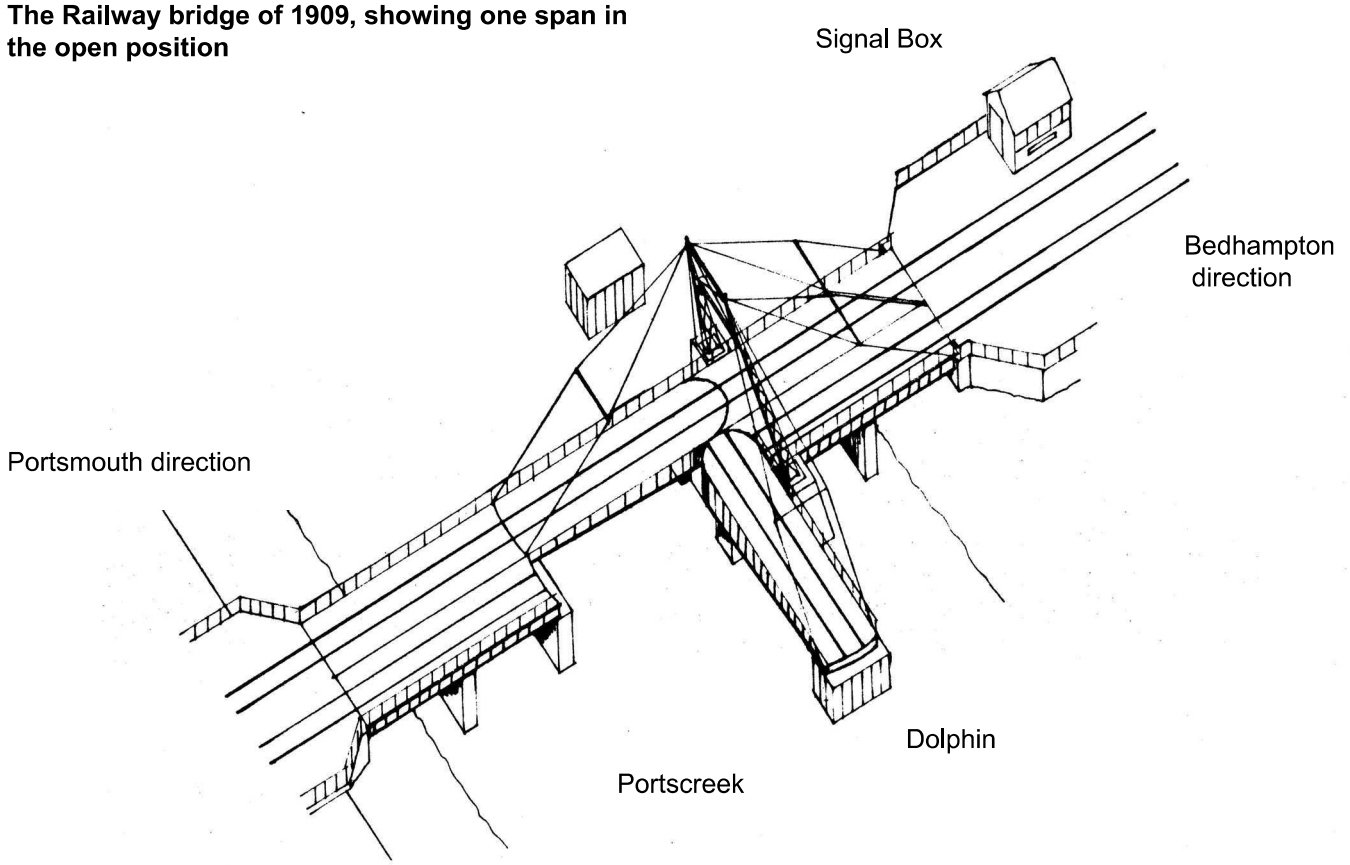
West Elevation





Locking Mechanism South Elevation

The Railway bridge of 1909, showing one span in the open position



The 'Coach and Horses' and War Office land.

In 1858, as part of the reconstruction of the Hilsea Lines, the War Office acquired almost all the northern end of Portsea Island and most of the land to the south of the Cosham - Farlington railway line. Part of this land included the freehold of the 'Coach and Horses' public house at what is now the junction of Copnor Road and London Road. In 1907, it was decided to sell off parcels of land not required for defence purposes and the lessee of the public house, Sir William Dupree, was asked to pay £10,000 for the freehold, an enormous sum and not surprisingly caused him a good deal of annoyance to the extent that he commissioned a painting to be exhibited outside, showing a stage coach being held up by a highwayman and the caption :-

"The Coach and Horses, a tale of Highway Robbery"
Asquith, Highwayman "Stand and deliver"
Coachowner "But I've just paid your pal Haldane for this lot"
Highwayman "Clever Haldane, he knew I was coming along, you may keep the coach but hand over the horses" AD 1907
Asquith - Chancellor of the Exchequer,
Haldane - Secretary for War

The public house was rebuilt in 1932 and the painting was reproduced in tiles and can still be seen.

Centre Bastion Left Flank casemates

Hilsea Lines Original Armament
168 Smooth Bore Cannon on Terre-plein
50 Smooth Bore Cannon in Flank Casemates

Amament 1869

No.	Gun	Position
East Demibastion		
1.	7-inch R.B.L. on short carriage	Terre-plein, East Demi Bastion, right flank
2.	7-inch R.B.L. on short carriage	Terre-plein, East Demi Bastion, right flank
3.	7-inch R.M.L. on Moncrieff carriage	Terre-plein, East Demi Bastion, salient
4.	7-inch R.B.L. on short carriage	Terre-ple:n, East Demi Bastion, left flank
5.	7-inch R.B.L. on short carriage	Terre-plein, East Demi Bastion, left flank
East Bastion		
6.	7-inch R.M.L. on Moncrieff carriage	Terre-plein, East Bastion, right flank
7.	7-inch R.M.L. on Moncrieff carriage	Terre-plein, East Bastion, salient
8.	7-inch R.B.L. on sliding carriage	Casemate, No. 6 Bastion
9.	7-inch R.B.L. on sliding carriage	Casemate, No. 6 Bastion
Centre Bastion		
10.	7-inch R.B.L. on sliding carriage	Casemate, No. 5 Bastion
11.	7-inch R.B.L. on sliding carriage	Casemate, No. 5 Bastion
12.	7-inch R.B.L. on sliding carriage	Casemate, No. 5 Bastion
13.	7-inch R.B.L. on Moncrieff carriage	Terre-plein, Centre Bastion, salient
14.	7-inch R.B.L. on sliding carriage	Casemate, No. 4 Bastion
15.	7-inch R.B.L. on sliding carriage	Casemate, No. 4 Bastion
16.	7-inch R.B.L. on sliding carriage	Casemate, No. 4 bastion
West Bastion		
17.	7-inch R.B.L. on sliding carriage	Casemate, No. 3 Bastion
18.	7-inch R.B.L. on sliding carriage	Casemate, No. 3 Bastion
19.	7-inch R.B.L. on sliding carriage	Casemate, No. 3 Bastion
20.	7-inch R.B.L. on Moncrieff carriage	Terre-plein, West Bastion, salient
21.	7-inch R.B.L. on sliding carriage	Casemate, No. 2 Bastion
22.	7-inch R.B.L. on sliding carriage	Casemate, No. 2 Bastion
23.	7-inch R.B.L. on sliding carriage	Casemate, No. 2 Bastion
West Demibastion		
24,	7-inch R.B.L. on sliding carriage	Casemate, No. 1 Bastion
25.	7-inch R.B.L. on sliding carriage	Casemate, No. 1 Bastion
26.	7-inch R.B.L. on Moncrieff carriage	Terre-plein, West Demi bastion, salient

Total
23 x 7-inch Rifled Breech Loading
3 x 7-inch Rifled Muzzle Loading
Of these
6 were on Moncrieff disappearing pattern II carriages
4 were on short carriages
16 were on sliding carriages

Movable Armament :
stored in gunsheds at Hilsea Barracks)
8... 40 pdr. R.M.L. on travelling carriages
4... 6.6 inch Howitzers on travelling carriages

Glossary of Military Terms

Bastion A projection covering the walls of a fort with flanking fire.
Bombproof A vaulted casemate or building covered with earth or concrete to withstand plunging shell fire.
Bore The inside of a gun barrel.
Breastwork Earth piled up in the form of a rampart.
Breech-loader A gun loaded from the rear or breech of a gun barrel.
Caponier A structure providing cross fire along a ditch.
Casemate A bombproof vault of brick or stone, usually covered with earth, which provided an emplacement for a gun or living quarters for soldiers.
Case shot A cylinder of thin metal filled with cast-iron shot and fired from a gun as an anti-personnel measure.
Chicane A drawbridge placed in a passageway to prevent the interior of the fort from being overrun.
Counterscarp The side of a ditch furthest from the fort, to provided flanking fire.
Counterscarp gallery A defensive work let into the counterscarp wall of a fort, to provide flanking fire.
Embrasure Opening in parapet or casemate front through which cannon could be fired.
Enceinte The space enclosed by the fort.
En decharge A wall built with arches and buttresses and behind which, the earth is allowed to fall at a natural slope.
Enfilade Fire directed from the flank of a fort so that projectiles will rake the length of a rampart without the garrison being able to reply.
Escarp or Scarp The side of the ditch nearest the fort.
Expense magazine A small magazine in which ready-to-use ammunition was stored near the guns.
Flanking fire Fire directed at the side of an attacker.
Flanking Gallery A passageway with embrasures to provide fire along a length of wall or ditch.
Fraises Horizontal palisades erected around the earthwork of a fort to help repel attackers.
Glacis A sloping earth bank in front of the walls of a fort.
Gorge The rear face of a fortification.
Grapeshot Iron pieces fired from a gun.
Haxo casemate A gun emplacement covered with a bombproof cover but open at the rear.
Keep of last resort A place to which the garrison may retire if the main fort is overrun by the enemy.
Muzzle-loader Any gun loaded from its front (muzzle) end.
Outwork A defensive work outside the main fort.
Parados Rampart protecting the rear of a fortification.
Racer Curved iron track set in the ground on which a gun is traversed.
Rampart Fortified embankment topped by a parapet.
Redan A detached work in a ditch of a fort or a projection at the rear of a fort.
Redoubt A detached work without flanking fire or a small fort.
Revetment The brickwork or masonry facing to an embankment.
R.B.L. Rifled Breech-loading gun.
Rifled gun A gun whose bore was cut along its axis with spiral grooves so as to spin an elongated shell and make its flight more accurate.
R.M.L. Rifled Muzzle-loading gun.
Talus The sloping part of a wall, thicker at the base.
Terreplein Broad level fighting platform on the rampart behind the parapet.
Trace The outline plan of a fort.
Traverse (1) To swivel a gun and its carriage, usually to point them at a target. **(2)** An earth bank positioned so as to protect troops from enfilade fire or to minimise the effect of a bursting shell.
Traversing Platform Wooden or metal platform which supported a gun and its carriage and which could be traversed on a racer track.

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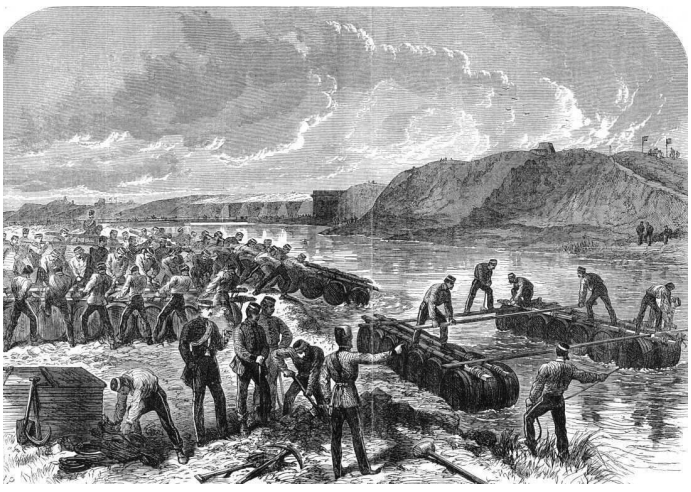
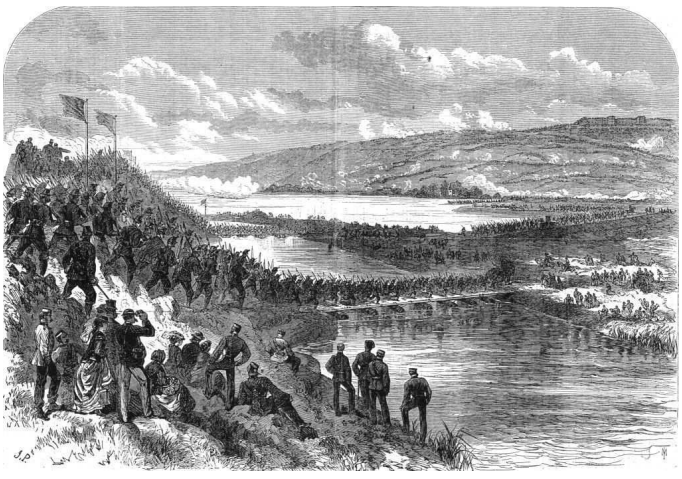
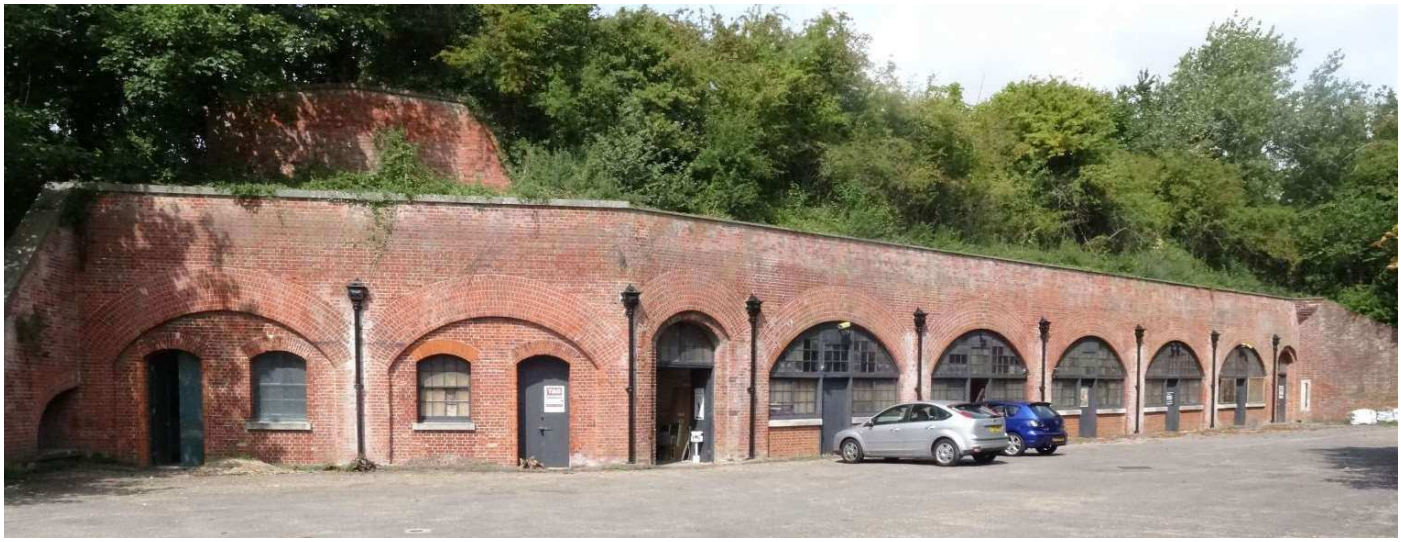


The Sorties from Hilsea Lines:

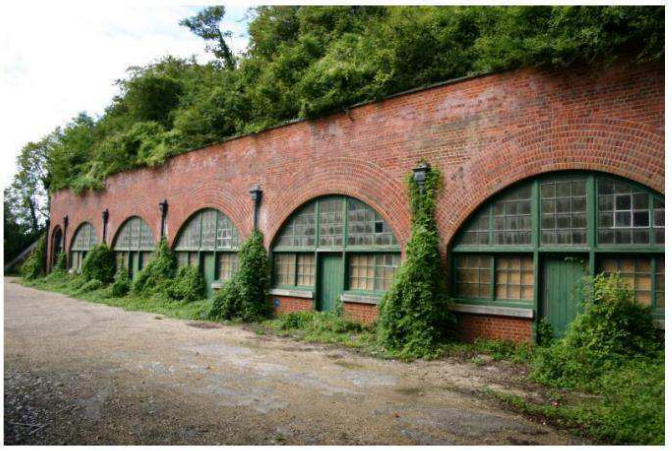




Above: Casemates in Left Flank of East Bastion 2017. Now the WWI Remembrance Centre
Below: Gun embrasures with merlons in Right Flank of Centre Bastion in 2011

Gun casemates inside Right Flank of Centre Bastion 2011

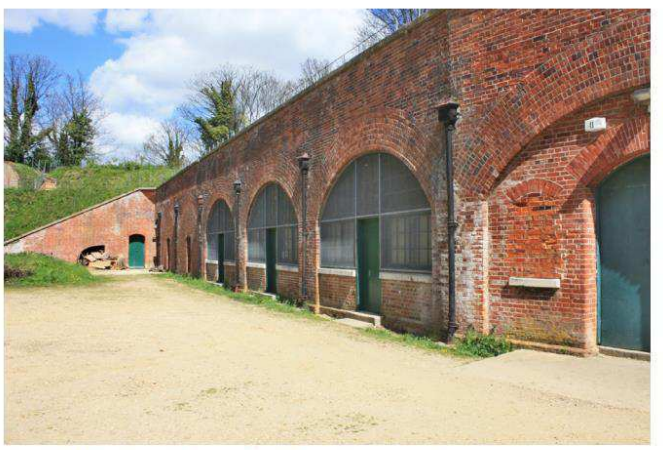
Gun casemates inside Right Flank of Centre Bastion 2011



Casemates in Left Flank of East Bastion 2011

Main Magazine East Bastion 2011

Area Magazine No.3 in 2011



Right Flank of West Bastion Casemates

Emplacement for Moncrieff Counterweight Carriage

Gun embrasure in Centre Bastion